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CRAFTS AND CRAFTSMEN IN TRADITIONAL INDIA

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(PARTS: I & II)

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"नित्यं शुद्धः कारुहस्तः"

मनुस्मृतिः अध्यायः ५, १२९.

"The hand of an artisan is always pure".

Manu V, 129.

P R E F A C E

Handicrafts of any given time and space reflect and preserve in them the results of centuries of patient experiments of man under varying circumstances; they carry on forms and techniques which remain relatively unchanged or unaffected over generations. Indeed the world of crafts is as significant in human history as the world of creative high art, philosophy, or ethics, for instance. Like art, craft-treasures also reflect the state of human society through the individual, and give us a glimpse into the core and kernel of the collective mind of the community through the mirror of the individual mind and skill that formed them. Moreover, crafts not only satisfy economic wants, but also the aesthetic cravings of man. In view of the role of crafts in the social and cultural life of the people of this land and in the sustained development of the nation's rural economy, the study of "Crafts and Craftsmen in Traditional India" has obviously a significance which no one can ignore.

The present work brings within its scope a vast field of study, and special emphasis is given to the origin and development of the basic strains and characteristics of some of the most important age-old crafts in a broad historical

perspective. The study also seeks to present an analytical picture of technological aspects of a few traditional crafts of India. It has also been my endeavour to throw light on the socio-economic life of the craftsmen with special reference to their social and economic status. Apart from the history, location, social and occupational stratifications, an account of raw materials, traditional tools and production techniques is also provided. In the end, an attempt has also been made to bring out in details the role of crafts and craftsmen, and the institutions directly connected with development of crafts. With a view to putting the crafts on firm footing, various steps, e.g. documentation of craft specimens in production centres, extending state patronage to craftsmen, spot demonstration to improve traditional designs and evolving new ones, imparting regular training to craftsmen and inducing them to adopt improved techniques of production, providing adequate marketing facilities, improving the working and living conditions of the craftsmen etc. have also been suggested in the end.

As a research study, it also attempts to assess the limits of rigidity within which traditional skill operates, as obtainable through a study of the castes; occupational mobility, social and economic stratifications; the

limitation of credit and marketing facilities; the persistence of traditional tools and production processes. The study may also claim distinction as being an attempt to produce a pictorial documentation of the processes of the manufacture of artifacts, and thus, to record the rich craft traditions before they become extinct under the impact of modernization.

The basic data for the study have been obtained from the original and secondary sources. The original sources mainly include the ancient and mediaeval literary texts and the epigraphic records, the historical and archaeological remains and art specimens preserved in the museums, the records of field investigations and the photographic collection of the Office of the Registrar General, India, while the bulk of the secondary sources include the craft survey reports published by the Office of the Registrar General, India, as well as the All India Handicrafts Board. For the interpretation of ancient craft examples and their distribution in time and space, a good deal of information has been obtained from the published reports and bulletins of the Archaeological Survey of India. Individual contributions in different aspects of Indian arts and crafts so far made by some distinguished scholars like T.N. Mukharji, Sir George Birdwood, Sir George Watt, A.K. Coomaraswamy,

Niharranjan Ray, C. Sivaramamurti, Motichandra, Ajit Mookerjee, D.P. Ghosh, S.K. Saraswati, Chintamoni Kar, Sir John Marshall, Atindra Nath Bose, Ruth Reeves, Stella Kramrisch, S.K. Maity, Jamila Brij Bhushan, Kamala Devi Chattopadhyay, S.K. Roy and T.M. Abraham have also been of immense value for the interpretation of basic data collected from various sources.

I am ever so grateful to my office, i.e., the Census Organisation which so kindly permitted me to use the illustrations and to make a comprehensive study of its vast Photographic Library relating to the crafts and craftsmen of this country. My sixteen years' long experience in craft studies would not have received the modelled form if I would not have availed of the opportunity of studying this magnificent photographic collection particularly that of Late Mrs. Ruth Reeves, who was one of the pioneers in craft studies in India. I am also grateful to Dr. Asok Mitra and Dr. B.K. Roy Burman whose arthropological and sociological approach to craft studies provided me a lot of incentive and insight. My grateful thanks are also due to the hundreds of craftsmen who have unknowingly retained the traditional flavour of rural arts and crafts even to this day.

I am grateful to my teacher and supervisor, Professor Niharranjan Ray, for the encouragement he always gave me to study this subject comprehensively and in some depth. But for his inspiring guidance and continued interest, the work would not have completed in time.

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C H A P T E R - I.

INTRODUCTORY.

Definition of Craft - Archaeological and Historical Background of Crafts in Time and Space : (1) Pottery and Terracotta, (2) Stone-cutter's Craft, (3) Wood-carving, (4) Ivory Work, (5) Metal Image-casting by *Cire-perdue* Process, (6) Textiles, and (7) Jewellery and Ornaments.

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CHAPTER - I : INTRODUCTORY:

Craft is both a method of industrial production and a form of artistic activity. The craft examples produced by the craftsmen are basically utilitarian in which the effort has been made to introduce aesthetic appeal. In early times there was little distinction between "fine art" and craft. The sculptural and architectural remains of ancient India represent the work of artisans. Only in recent times the "fine arts" have become more clearly differentiated from the crafts, but the latter in the hands of an excellent craftsman are still works of art.

Before the introduction of machinery every article of domestic use was produced by hand. If a craftsman did his job perfectly he could easily acquire a patron who normally used to keep him in continuous employment. In a gradually extending world the craftsman became the keystone of a developing commerce. He organised guilds which afforded his sons in his trade, for there is a strong tradition of continuity by inheritance in the history of craftsmanship. Particular techniques passed down in families for generations, and even apprenticeship was a quasi-paternal relationship. Thus the craftsman increased gradually in individuality, security, scope and importance until the invention of machinery revolutionized industrial production.

With the introduction of machinery there has been a lot of changes in the traditional craftsmanship, even then a worker who produces an article by handwork is still a craftsman inspite of his labour being facilitated by an electric motor, by machine

spun yarns or by standard dyes made in big chemical plants. It cannot be denied that the technique of craft may change with the invention of new tools; its prevalence may decrease as industry become mechanised; the status of the craftsman may change as he beomes part of a larger industrial polity, but despite these apparently inimical developments craft remains an essential method of production in many lines of manufacture, not only because it is for some products artistically superior to machinery, but also beause it is in many cases essential for well made goods.

The study of crafts is an essential key to the understanding of a people's culture. It cannot be denied that in man's struggle for existence, artifacts and resources are his greatest assets. In India, the crafts have an importance all their own. They express the great tradition and cultural heritage of our country. As long as the masses of India retain their taste for superb workmanship, as long as they continue to appreciate the value of skilled workmanship, as long as they continue to delight in the really bautiful, so long will the crafts of India survive and for ever flourish. The reason for their preservation and development lies in the fact that they are the material symbols of India's unique cultural ethos.

According to dictionary meaning the word craft denotes 'skill', 'art', 'trade' etc. In India, however, craft is always associated with art and that is why a craft example is usually considered to be a specimen of folk-art or people's art.

Moreover, in Indian craftsmanship traditional characteristics are very much predominant. A craftsman inherits his technical skill generally from his father or grand-father who may have inherited their technical skills from their forefathers. The process of transmission of hereditary skill from generation to generation is a very important factor in the history of Indian craftsmanship. Over thousands of years this multitude of processes were perhaps evolved into perfection.

Craft is more concerned with the household art than with the small-scale or cottage industries. In the small-scale or cottage industries technical labour or skill is given more importance, whereas in the household art or craft artistic or aesthetic elements play an important role. It is not the craft, but the industrial art which can be put under the category of cottage or small-scale industries. Industrial arts relate to the large or small-scale production of articles primarily utilitarian in which a very little effort is made to introduce aesthetic appeal. They reach their widest significance when their production assumes the proportions of an industry. The field in general is that of the industries producing mechanised and sophisticated goods for personal and household use and decoration such as those concerned with clothing, textiles, jewellery, furniture, ceramics, glass, metal work and the printing industry. Craft as a method of making artistic goods has its chief significance when it exists in connection with naivity and simplicity of producing requisites of every day utility for

the simple masses of the vast country-side. The shapes and forms of the craft examples are mostly traditional but, within this tradition there is an individual fantasy. The traditional craftsman produces an object, which in its highest aesthetic form comes from the intimate and organic connection between hand and eye and brain, and the rhythmic movement of the soul. Our craft examples are, therefore, works of art, not merely of use.

The Indian craftsman has been an organic element in the national life. He is seen to have produced two types of craft examples such as rural and urban. In a developing economy the craftsman has to satisfy the needs of both the rural and the urban population. The rural folk are satisfied with the simple and less-costly objects of daily use, while the urban people demand more costly and sophisticated craft specimens whether they are for decorative or utilitarian purposes. That is why in ancient India we find the simultaneous growth of rural and urban crafts. The same craftsman who produced simple articles for use of the common people had to produce deluxe examples on demand from the sophisticated urban masses. In his review of the Indian craftsman Coomaraswamy has rightly observed, "Broadly speaking, he is associated with that life in one of three ways: as a member of a village community; as a member of a guild of merchant craftsman in a great city; or as the feudal servant of the king, or chieftain of a temple"[1]. As a feudal servant he

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1. A.K. Coomaraswamy, The Indian Craftsman, London, 1909, p.1.

had to cater the needs of the royal family, while as a chieftain of a temple his duties were multifarious specially including the maintenance of the temple as well as its accessories.

In India, the study of crafts and the craftsmen with particular reference to the ancient and mediaeval periods has been made by a number of scholars, but, their studies are mainly concerned with the socio-economic aspects of crafts and the craftsmen. Moreover, these scholars have primarily dealt with the textual material and as a result the archaeological data specially the excavated materials have not been properly analysed. In this chapter an attempt, however, will be made to throw light on the archaeological and historical back-ground of some of the important traditional crafts of India such as Pottery and Terracotta, Stone-cutter's craft, Wood-carving, Ivory, Metal Image-casting by Cire-perdue Process, Textiles, and Jewellery and Ornaments which have been selected for special study in this dissertation.

1. Potter's Craft:

Potter's craft is supposed to be one of the most important traditional crafts of India. It has come down to our times from prehistoric age. In the Neolithic Age, when the nomads had settled to a stationery life, the potter's craft developed with other industries. Potter's craft may be classified into two categories viz. pottery and terracotta.

"Trust to nature, in the directness and simplicity of its forms, and their adoptation to use, and purest in art, of all its homely and sumptuary handicrafts is the pottery of India."[1] Thus writes Sir George Birdwood eulogistically, and this is praise indeed, since perhaps no feature of Indian Art has such a long tradition of artistic achievements as our pottery. Pottery, according to Henri Frankfort[2], is an essential element of the form of a civilization. Pottery relies not only throw light on the food habits of the epople, their religious and social customs, the technological advancement attained by them and even their economic condition; but also provide us with a more satisfactory basis than a mere event for reviewing the historic archaeology of the Indian Sub-continent.

In India pottery could not become an important factor in human affairs until Neolithic man had adopted a settled mode of life. It was in the Neolithic Age, when the craft was associated with the settled, farming communities or pit-dwelling people who apparently introduced agriculture and an allied domestic economy.

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1. Sir George Birdwood, Indian Arts, Part II, London, 1884, p. 387.

2. The Birth of Civilization in the Near East, London, 1951, p. 16.

Neolithic Pottery

The pottery of Neolithic times[1] is often coarse and hand-made representing pale grey or burnished grey, red, orange or pale-red, brown, pale-brown or reddish brown, and black and cream-slipped wares found from different Neolithic sites of India such as Langhnaj in North Gujarat, Brahmagiri, Sanganakallu and Nāgārjunakonḍā in the districts of Chitaldrug and Bellary (Mysore) and Guntur (Andhra Pradesh), Piklihal (Andhra Pradesh), T-Narasipur, etc. in the Deccan, Kuchai in Orissa and Burzahom in Kashmir. The development of potter's craft during the Neolithic period shows that the people knew the art of producing fire and made pottery by hand. They also painted and decorated their pottery with various incised designs. The Neolithic pottery which is usually utilitarian in character mainly consists of different types of bowls, jars, vessels,etc., while the burial urns are generally grey in colour having a globular body with a wide mouth. The spouted pots, with rounded base and narrow flat bases and also spouted bowl and broad-lipped bowl appear to be feeding vessels;

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1. Marg, Vol.XIV, June, 1961, Number 3, p.4ff; Centenary Exhibition - Archaeological Survey of India, New Delhi, 1961, "The Stone Age" - by B.K. Thapar, p.7; Indian Archaeology - by A. Ghosh, 1960, Pp.22, 30; Indian Archaeology 1957-58, p.5, 1958-59, pp.6, 33 and 1960-61, p.11; Ancient India, No.4, p.181ff, pp.222-226, No.9, pp.66, 74 and No.14, 1958, pp.104-105; Stuart Piggott, Prehistoric India, 1961, Chapter II, p.40 and F.E. Zeuner, "The Microlithic Industry of Langhnaj", Gujarat, Man, LII, article 182, (1952).

while the simple flaring-sided bowls, with rounded bases and bowls with conical bases are intended to be kept on other pots as they are incapable of standing independently. The study of Neolithic pottery thus brings into light an overall picture of a settled stationery life in a very early stage of human civilization. Neolithic pottery, with its most primitive and aesthetic forms, is not only artistic or utilitrian as it is sometimes called, but also a philosophically profound expression of the aesthetic instinct of the Neolithic people.

The next important phase of development in Ancient Indian Ceramic Industry is termed as 'Chalcolithic', signifying a phase characterised by the introduction of metal, specially copper and bronze. Chalcolithic pottery is divided into two categories viz. Harappan and Post-Harappan.

Harappan Pottery

The great bulk of Harappan pottery[1] is wheel-turned, but some hand-made pottery have also been recovered from the lower levels of the excavated sites. Most of the Harappan pottery is of pinkish ware with a bright red slip (or sometimes a white coating, possibly of gypsum, which appears to be deliberate) and decoration where present in black. Occasionally three colours - buff or pink, red and black appear, and, more rarely white and

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1. Marg, Vol.XIV, June, 1961, No.3, p.4ff; Mackay, Further Excavations at Mohenjo-daro, Vol.I, 1937-38; Mortimer Wheeler, The Indus Civilization, Cambridge History of India, A supplemantary volume, 1953, pp.71-73; M.S. Vats, Excavations at Harappa, Vol.I, 1940; Indian Archaeology - 1953-54, pp.6 and 7, 1954-55, pp.9, 11, 12, 1955-56, p.6, 1956-57, pp.15 and 16, 1957-58, pp.13, 15, 18-20, 1958-59, pp.14-15, 19-21, 52, 1959-60, p.18 and 1960-61, p.32 and Bull. Deccan College Res. Inst., XI, No.I, (Dec.1950), p.3ff.

green are used, apparently after firing. Sometimes a clay was used that burned grey, but whether the colour was natural or was darkened by the admixture of carbonaceous material with the clay has not been determined. The pots were baked in round kilns with domed tops, pierced floors and underlying fire-pits.

Harappan pottery, though strictly utilitarian, does not mean that the pots and the utensils were devoid of any artistic decorations. The pots were painted with geometrical and naturalistic designs. The geometrical designs mainly consist of lozenges, triangles, rectangles, circles, parallelograms, either hatched, plain or completely filled, along with simple bands, wavy lines and loops. The naturalistic designs reveal a variety of animals and birds. Some of the paintings on pottery depict peacock, fish, bull, human beings, stag, goat, fowl, serpant, etc. The flora depicted in painted motifs consists of the pipal leaf, palm-leaf, etc.(PL.I, Fig.1). Of course, most of these motifs are drawn in stylized fashion, even then in many cases they can be identified.

Apart from Mohenjodaro and Harappa, Harappan pottery has been found in a good number of sites, the most important of them being Bara (Distt. Ambala), Rupar (Distt. Ambala), Kalibangan (Distt. Ganganagar), Alamgirpur (Distt. Meerut), Adkot (near Rajkot), Bhagatrav (near Broach), Hasanpur (Distt. Surat), Lothal (Distt. Ahmedabad) (PL.I, Fig.2), Mehgam (near Broach), Pithadia (44 miles south of Rajkot), Prabhās Pāṭan (Distt.Sorath), Rangpur (Distt. Jhalawar) and Telod (near Broach). The pottery types recovered from these sites clearly prove that the people

of Western and North-Western India reached a very high stage of civilization during the Harappan period.

Post-Harappan Pottery

In recent times, remains of Post-Harappan Chalcolithic cultures have been traced in a good number of sites viz. Eran (Distt. Sagar), Maheswar (Distt. Nimar), Nagda (Distt. Ujjain), Navdatoli (Distt. Nimar), Bahal (Distt. East Khandesh), Chandoli (Distt. Poona), Daimabad (Distt. Ahednagar), Prakash (Distt.West Khandesh), Ahar (Distt. Udaipur) and Jorwe and Nasik in the Deccan. These sites have revealed a variety of ceramic fabrics and techniques. Along with the technical aspects, there are a multitude of shapes which may have been derived from different sources other than the Harappan culture.

Of the various pottery types of the Post-Harappan period[1] the most important ones are the (1) Painted Black-and-Red Ware, (2) Cream-slipped Ware, (3) Malwa Ware and (4) the Jorwe Ware. The Painted Black-and-Red Ware has been found abundantly at Ahar in Rajasthan and at Navdatoli in Malwa. It is as yet uncertain as to the people who introduced this ware, which is the rsults of inverted firing. The Cream-slipped Ware which is reddish or pinkish in appearance bears a close affinity in shape and in fabric with the painted Black-and-Red Ware. These two wares -

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1. A. Ghosh - Indian Archaeology, New Delhi, 1960; Marg, Vol.XIV, June, 1961, No.3, p.7ff and p.35; Sankalia, Subbarao, B. and Deo, S.B., Excavations at Maheswar and Navdatoli, Poona and Baroda, 1958, pp.117-132; Indian Archaeology 1953-54, p.8, 1954-55, pp.5-7 and 13, 1955-56, pp.8-11 and 14, 1956-57, p.17, 1957-58, pp.30-32, 1958-59, pp.15-18 and 30-31, 1959-60, p.27 and 1960-61, pp.17, 20 and 27.

painted Black-and-Red, and Cream-slipped - by the very nature of fineness and absence of big sized pots, may be called de-luxe wares. The Malwa Ware i.e. the bulk of pottery of Navdatoli (Malwa) appears to be very artistic as a result of elaborate treatment of the surfaces by means of thick slip of reddish to pink colour and painting in black colour. At Navdatoli all the pottery is not painted and elegant, side by side coarser ware for every day use has also been found. The Jorwe Ware (PL.I, Fig.3) which is distinct on account of its metallic ring, matt dull-red surfaces and monotonous geometrical paintings in black colour is more abundant and uniform in the Deccan at Jorwe, Nasik, Nevasa where it is the sole painted ware. Jorwe Ware was made from a well-levigated clay and fired to a high temperature.

Painted Grey Ware

In the beginning of about first millennium B.C. a type of pottery called the Painted Grey Ware[1] appeared in the Punjab and Uttar Pradesh. This ware is grey in appearance with a core of well-levigated clay and painting is executed in black colour. The shapes in this ware are generally dishes and straight sided bowls with rounded bases (PL.I, Fig.4). The colour of the ware

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1. Marg, Vol.XIV, June 1961, No.3, p.8; B.B.Lal, "Excavation at Hastināpura and Other Explorations in the Upper Gaṅgā and Sutlej Basins 1950-52", Ancient India, Nos.10 and 11, 1954 and 1955, pp.5-151; Ancient India No.1, 1946, pp.58-59; Ancient India, No.9, 1953, p.138; Indian Archaeology 1953-54, p.6, 1956-57, p.24 and 1958-59, pp.48-50 and 54.

varied from ashy to dark grey, the greyness being apparantly the result of reducing conditions in the kiln. Besides Hastināpura, this ware has been found at a good number of archaeological sites, the most important of them being Ahichchhatrā (Distt. Bareli, Uttar Pradesh), Alamgirpur (Distt. Meerut, Uttar Pradesh), Indrapat (Indraprastha - the ancient mound on which stands the Purānā Qilā of Delhi), Kotla Nihang (Distt. Ambala, Punjab), Mathurā (Uttar Pradesh), Panipat (Distt. Karnal, Punjab), Rupar (Distt. Ambala, Punjab), Śrāvastī (Distt. Bahraich, Uttar Pradesh), Tilpat (about 13 miles to the South of Delhi) and Ujjain (Madhya Pradesh). The site of Ujjain reveals the southern - most extension of the Painted Grey Ware Culture. From the wide distribution of this ware it may be assumed that this pottery played an important role in the ceramic industry of the 'Dark Age' which is likely to have begun in Circa 1100 B.C.

Northern Black Polished (N.B.P.) Ware

In the second half of the first millennium B.C. we come across a type of pottery throughout the Gangetic Valley. This pottery popularly known as N.B.P. (Northern Black Polished)[1]

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1. Marg, Vol.XIV, June, 1961, No.3, pp.37-46; Ancient India, No.1, 1946, p.37ff and p.55ff, No.5, p.79, No.9, 1953, pp.161-163, Nos.10 and 11, 1954 and 1955, pp.5-151; Indian Archaeology 1953-54, pp.6 and 8-10, 1954-55, pp.13-15, 1955-56, pp.14 and 19-20, 1956-57, pp.18-19, 24 and 30, 1957-58, pp.11, 19, 23, 32, 36, 48 and 50, 1958-59, pp.5 and 48-50, 1959-60, p.14 and 1960-61, pp.4-5 and 37; M.D. Dikshit, Tripuri - 1952, Appendix II, pp.136-139; H.D. Sankalia, B. Subbarao and S.B. Deo, Excavations at Maheswar and Navdatoli, Poona and Baroda, 1958, pp.117-132; D.R. Sahni, Excavations at Bairat, 1936, p.24; K.G. Goswami, Excavation at Bangarh, Calcutta, 1948, p.27 and T.N. Ramachandran, "Tāmralipti (Tamluk)", Artibus Asiae, XIV, 1951, p.226ff.

appears to have been very popular in the domestic usage. This pottery made of nicely levigated clay and potted on a fast wheel, is usually well-fired and has a strikingly polished surface having almost a lustrous metallic finish. Regarding colour it may be mentioned that the coal-black shade is the common - most, but the polish differs and the other colours being steel blue, silvery, golden, pinkish, gold-blue and brown-black.

Specimens of N.B.P. Ware have been recovered from a good number of archaeological sites, the most important of them being Rupar (Distt. Ambala), Maheswar (Distt. Nimar), Rājgīr (Distt. Patna) (PL.II, Fig.1), Kausāmbī (Distt. Allahabad), Kumrāhār (Distt. Patna), Prakash (Distt. West Khandesh), Purānā Qilā (New Delhi), Ahar (Distt. Udaipur), Mathurā (Uttar Pradesh), Nevasa (Distt. Ahmadnagar), Nagda (Distt. Ujjain), Ujjain (Madhya Pradesh), Kanauj (Distt. Farrukhabad), Sonpur (Distt. Gayā), Chandraketugarh (Distt. 24-Parganas), Vaisālī (Distt. Muzaffarpur), Ter (Distt. Osmanabad), Navdatoli (Distt. Nimad), Rājghāṭ (Distt. Vārānasī), Amarāvatī (Distt. Guntur), Sāñchī (Distt. Raisen), Tripuri (Distt. Jabalpur), Bahal (Distt. East Khandesh), Brahmapuri(near Kolhapur), Nasik (Distt. Ahmadnagar), Sisupālgarh (Distt. Puri), Ahichchhatrā (Distt. Bareli), Hastināpura (Distt. Meerut), Srāvastī (Distt. Bahraich), Bāngarh (Distt. Dinajpur), and Tamluk (Distt. Midnapur).

From the nature of wide distribution it can be well inferred that there was common ceramic tradition almost all over the country. The potters of different regions probably

used to maintain a reciprocal contact among themselves, and as a result no significant local variation is to be noticed in the fabric, forms and designs of the N.B.P. examples. As it appears, this ware was the deluxe ware of the time and naturally beyond the reach of the purse of the commoners.

Black-and-Red Ware

In the second-third century B.C. we come across a type of pottery in Maharashtra at Kolhapur, Nasik, Nevasa, etc. which is popularly called Black-and-Red Ware. This ware, which is black inside and red on the outer bottom, takes this appearance because of the technique of inverted firing. As regards the distribution of this ware it may be pointed out that it has been unearthed at different archaeological sites viz. Broach and Prabhāspāṭan (Gujarat), Maheswar, Nagda and Ujjain (Madhya Pradesh), Bahal, Nevasa and Prakash (Maharashtra), Rājghāṭ (Uttar Pradesh), Chandraketugarh (West Bengal), Ahar (Rajasthan), Sonepur and Vaiśālī (Bihar). This ware was also the most common ware in the Deccan at Paithan, Kolhapur, Nasik, Nevasa, etc.[1] From its distribution it may be inferred that the ware was more popular in Central and Western India and the Deccan than it was in the Gaṅgā-Yamunā Valley where the N.B.P. Ware played a significant role in the ceramic industry of the time.

Megalithic Ware

Contemporary to the Black and Red Ware is the Megalithic Black-and-Red Ware. This ware is a fine product, as it has a

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1. Marg, Vol.XIV, June, 1961, No.3, pp.8 and 15; Indian Archaeology, 1954-55, pp.13-15, 1955-56, p.14, 1956-57, pp.18-19 and 1957-58, p.50.

uniformly thin side and is wheel-made and polished. The Black and Red effect is due to the process of inverted firing. This ware was generally associated with burials. The most common shapes are conical bowls, hemispherical and oval-shaped bowls etc. This ware is restricted to the regions south of Godāvarī and is reported to have been recovered from a good number of Megalithic sites viz. Sanur (Distt. Chingleput), Amirthamangalam (Distt. Chingleput), Porkalam (Distt. Trichur), Kunnattur (Distt. Chingleput), Jodigenahalli (Distt. Bangalore), Narasipur (Distt. Mysore), Brahmagiri and Chandrāvallī (Distt. Chitaldrug), Maski (Distt. Raichur), Nāgārjunakoṇḍā (Distt. Guntur) and Adichanallur (Distt. Tinnevelly)[1]. From the nature of distribution it appears that this ware was very popular among the Megalithic folk and established a significant place for itself in the corpus of Indian pottery types.

Indo-Roman Wares

Round about the beginning of the Christian era India had extensive trade contacts with the Western World. The results of these are reflected in pottery. Indo-Roman Wares (PL.II, Fig.2) mainly include Amphora, Rouletted and Arretine Wares. The Amphora is a cylindrical pot with conical base, medium high neck and two handles attached to the neck and shoulders. Besides Arikamedu (near Pondicherry) this ware has been found so far at Navasa, Ter,

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1. Marg, Vol.XIV, June, 1961, No.3, p.15; Ancient India, No.4 1947-48, pp.181ff, 200-202 and 271-274, No.9, 1953, p.105, No.12, 1956, p.31, No.15, 1959, p.4ff; Indian Archaeology 1953-54, p.8, 1956-57, pp.34-35, 1957-58, p.36 and 1958-59, p.33.

Junnar in the Deccan and Taxila in the North-Western Frontier[1]. The Rouletted Ware is a fine black-slipped and burnished ware with a decorated pattern on the inner bottom, drawing by a machine - like contrivance called a 'Roulette'. This ware has been reported from Arikamedu (near Pondicherry), and a few important sites viz. Chandraketugarh (Distt. 24-Parganas, West Bengal), Tamluk (Distt. Midnapore, West Bengal) and Śiśupālgarh (near Bhuvaneswar, Orissa) in Eastern India, Brahmagiri (Distt. Chitaldrug, Mysore), Chandrāvallī (near Chitaldrug), Sengamedu (Distt. South Arcot), Amarāvatī (Distt. Guntur, Andhra Pradesh) etc. Among these sites Arikamedu, Chandraketugarh, Tamluk, Śiśupālgarh and Brahmagiri have yielded beautiful examples of Rouletted Ware[2]. The Arretine Ware is a red glazed ware, the glaze varying from a sealing-wax colour to deep orange-red. The ware has been named 'Arretine' from the Latin name of Arezzo (Arretium). As regards the date of the ware it has been suggested that probably "no Arretine pottery reached India after A.D. 50"[3]. The ware has been mainly reported from Arikamedu which has bea described as the 'Indo-Roman Trading Station' on the east coast of India.

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1. Marg, Vol.XIV, June, 1961, No.3, p.15; Ancient India, No.2, July, 1946, p.17ff; Indian Archaeology 1954-55, p.7 and 1960-61, p.21 and Sir John Marshall, Taxila 3 Vols.(Cambridge, 1951).
2. Marg, Vol.XIV, June, 1961, No.3, p.15; Indian Archaeology 1954-55, p.20, 1957-58, p.52, 1958-59, p.5 and 1959-60, p.51; Ancient India, No.2, July, 1946, p.45ff, No.4, July 1947 - January 1948, pp.200 and 277, No.5, January 1949, p.62ff and No.9, 1953, pp.167 and 169.
3. Ancient India, No.2, July 1946, p.34ff.

Decorated Pottery (200 B.C. to 650 A.D.)

During the period between 200 B.C. and 650 A.D. (covering Śuṅga, Kushāṇa and Gupta ages) decorated pottery played an important role in establishing the cultural sequence of a number of ancient sites particularly of North India. Pottery of this period is found to be decorated by painting, stamping, making, incision, moulding and in applique' designs. The decorations mainly consist of simple horizontal lines, loops, diamonds, circles, triangles, quadrangle, chevrons, criss-cross, human, animal and bird motifs, rosettes, floral designs and a variety of religious symbols like dharmachakra, tri-ratna, nandipāda, swastikā and fish. All these designs have been classified into four groups, i.e. geometrical, naturalistic, religious and miscellaneous. The geometrical designs either painted, incised, stamped or mould-made, generally include oblique, horizontal or wavy lines, loops, notches, chevrons, diamonds, triangles, concentric circles, quadrangles, crescents, cross, criss-cross, dots, festoons, circlets with hooks, ropes, lozenges, sigmas, etc. It may be noted here that some of these designs have been survived from very early times in India. The naturalistic designs which are generally mould-made or stamped mainly consist of lotuses, rosettes, leaves, conventionalised petals, conch-shells, etc., while the religious motifs generally include taurine and naga symbols, swastika, nandipāda, tri-ratna, chaitya, dharmachakra, fish and the sun. The miscellaneous patterns take the form of human figures, animal and bird motifs such as horse, elephant, lion, squirrel, parrot, etc. fish, spout modelled in the form of a tortoise, cowri-shell,

panels having pendants, circles and hooks or crescents, floral designs like rosettes and lotus buds, rows of stars, harpoons and knob and head patterns (PL.II, Fig.3).

Decorated pottery has been recovered from a good number of archaeological sites in North India, viz. Hastināpura (Distt. Meerut, Uttar Pradesh), Rupar (Distt. Ambala, East Punjab), Purānā Qilā (New Delhi), Ahichchhatrā (Distt. Bareli, Uttar Pradesh), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh), Kanauj (Distt. Farrukhabad, Uttar Pradesh), etc.[1] Apart from North Indian sites decorated pottery has also been recovered from the South as well as the peripherial regions in the North, East and the West. As for example, some of the East-Indian sites, viz. Pāṭaliputra (Patna, Bihar), Karian (Distt. Darbhanga, Bihar), Chandraketugarh (Distt. 24-Parganas, West Bengal), Bāngarh (Distt. Dinajpur, West Bengal), and Śiśupālgarh (Distt. Puri, Orissa) have yielded similar decorated pottery examples found in other North-Indian sites.[2] Decorated pottery examples recovered from the South-Indian sites such as Arikamedu (near Pondicherry), and Nāgārjuna-Koṇḍā (Distt. Guntur, Andhra Pradesh)[3], also bear similar decorative motifs as found on North or East-Indian pottery examples.

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1. Marg, Vol.XIV, June, 1961, No.3, pp.47-54; Ancient India No.9, 1953, pp.126, 138 and 139 and Nos.10 and 11, 1954 and 1955, pp.17 and 63; Indian Archaeology 1954-55, p.14, 1955-56, p.19, 1957-58, p.50 and 1960-61, p.37.
2. Indian Archaeology 1955-56, p.22, 1956-57, p.30, 1957-58, p.52 and 1959-60, p.51; L.A. Waddel, Report on the Excavations at at Pāṭaliputra, Calcutta, 1903; Ancient India, No.9, 1953, p.155; K.G. Goswami, Excavations at Bāngarh, Calcutta, 1948 and B.B. Lal, Ancient India, No.5, January 1949, p.62ff.
3. Ancient India, No.2, July 1946, p.49ff and Indian Archaeology 1954-55, p.23.

It is very sad to reflect that the decorated pottery which had a large bearing on the contemporary art and culture of the country lost its usual charm and importance just after the end of the Gupta and Post-Gupta periods. This is probably due to the reason that from this time onwards the people of higher social strata were more interested in using metal wares which could be used for a long time. In this way the potters of the succeeding ages may not have been provided with the necessary social conditions and patronage which are always needed for the most devoted craftsmen in earthenware. With the use of bronze and copper wares, the decorated pottery may have suffered a set back in the succeeding ages, but the ordinary wares along with a few decorated types continued to survive among the ordinary folk who were still growing food and eating it in pots and pans.

Mediaeval Pottery (Early and late mediaeval periods)

From the middle of the seventh century A.D. to the fourteenth century A.D. is a period which is not yet well-known, so far as the ceramic industry of India is concerned. It has already been noted that from the Post-Gupta period onwards the potter's art was affected probably by the large use of metal vessels and as a result a deterioration set in the general quality of the pottery. Along with plain pottery types painted pottery was also in vogue, but its distribution was very much limited. Moreover, the pottery as a whole showed a decadence in fabric as well as treatment of the surfaces.

The last important phase of ceramic industry in India belongs to the late mediaeval period after about the fourteenth century A.D. The pottery of this period is avowedly utilitarian except perhaps the Painted Glazed Ware introduced by the Muslim invaders. This glazed pottery which may be considered as the deluxe ware of the late mediaeval period has been recovered from different sites of India such as Pāṭaliputra (Patna, Bihar), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh), Kanauj (Distt. Farrukhabad, Uttar Pradesh), Hastināpura (Distt. Meerut, Uttar Pradesh), Alamgirpur (Distt. Meerut, Uttar Pradesh), Lalkot and Qilā Rai Pithorā (Delhi), Rupar (Distt. Ambala, East Punjab), Ujjain (Madhya Pradesh), Nevasa (Distt. Ahmedabad, Maharashtra) and Bahal in East Khandesh[1]. From the nature of distribution it may be suggested that this pottery was predominant specially in those areas of the country where the Muslim rule had a firm footing for a long time. Besides this ware of the time, there were also unglazed and painted wares produced by the Muslim potters. In this regard the Muslim potters may have been directly influenced by the age-old traditions survived among the Hindu potters, whose artistic skill so long developed in the manufacture of unglazed and painted wares for domestic and decorative purposes.

Another interesting type of pottery of the mediaeval period is the Chinese Celadon Ware recovered from Arikamedu,

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1. Indian Archaeology 1953-54, p.7, 1955-56, pp.11 and 20, 1956-57, p.18, 1957-58, pp.24-25 and 51 and 1958-59, p.54; Ancient India, No.9, 1953, p.126 and Nos.10 and 11, 1954 and 1955, pp.19-20 and 71.

an Indo-Roman trading station on the east coast of India.[1] This ware is greyish white in section, but assumes a dull pink surface where it has been exposed directly to the heat of the kiln. For the most part it is covered with a jade green glaze, usually crackled. The shapes indicate bowls and dishes, all with foot-rings. The bowls are usually fluted or dimpled.

From the study of the mediaeval pottery it appears that there has been no healthy jolt in the potters' art of this time. Apart from a certain technical proficiency gained in the art of glazing brought in by the Muslims, no significant change or evolution is seen to have taken place either in the technique or in the forms of pottery produced by the mediaeval potters. The Muslim potters may have enjoyed great popularity for their craftsmanship in glazing works, but in the manufacture of other wares they have simply followed the traditional methods prevalent among the Hindu potters. As regards the Celadon Ware it may be pointed out that it may have been imported in some parts of India, but it could not affect the art of the potters of the soil. As a matter of fact, the mediaeval period represents a stage in the ceramic industry of India, when the normal process of evolution was almost on the verge of extinction because of a continued process of devolution already incipient in the later phase of the Post-Gupta period.

Contemporary Pottery

Like other traditional crafts of India pottery still plays an important role in the socio-economic life of the

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1. Ancient India, No.2, July 1946, pp.91-92.

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people. There is no house in India, whether in village or city, that does not use pottery vessels for storing grains or drinking water, etc. Due to the introduction of glass and China Wares, the use of traditional wares may have been slightly on the decline, but that does not mean that the people of our country have no liking for traditional earthen wares. Even today, in every village in the country the potter can be seen sitting by his primitive wheel. He still produces daily requisites of village life - the pots and jars, the bowls and water pitchers (PL.II, Fig.4). Among other notable examples produced by him, mention may be made of Surāhīs, Kulhārs (cups), Kalasas, glazed Martabāns, Kapālas (cooking pots), Loṭās, pātras or platters, Sarakās or goglets and other such vessels which are not only graceful and charming, but also highly instructive (PL.III,Fig.1). Moreover, these pottery examples are significant as object lessons in historic and anthropological sciences. The variations in shapes, the colour scheme and the primitive methods of ornamentation shown on them may also afford suggestions of great value in the study of Indian decorative art. Sir George Watt[1] has rightly pointed out that, "all this has been very nearly neglected and the scholars of Europe and America may be said to have been groping in the dark, with fragments of prehistoric pottery, while the prototypes of many of the most instructive forms and designs they are dealing with, are still produced by the village potters of India and might be studied with great advantage".

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1. Sir George Watt, Indian Art at Delhi, 1903, p.83.

However crude his wheel, however primitive his mode of work, it has already been noted that the traditional Indian potter still continues to play a very vital part in the society. His is the job of supplying the whole village with pitchers for keeping water, jars for storing grains and spices and cooking pans for the women folk. His is an honoured Office for he is a respected member of the village social hierarchy. According to Birdwood[1], "he is in truth one of the most useful and respected members of the community, and in the happy organisation of Hindu village life there is no man happier than the hereditary potter, or Kumbār". Due to the introduction of metal and machine wares the potter's art may have been affected to some extent, but its traditional flavour still pervades in a good number of present earthen utensils. The contemporary Indian potter, potter craftsman, in India, is an intellectual who has retained his age-old and hereditary artistic skill even to this day.

Terracotta:

Besides pottery, the potter's craft also includes the manufacture of terracottas which are of high antiquity. Objects and artifacts in terracotta were intended chiefly for domestic use and worship and household decoration, for children's toys, for popular religious and magical purposes. According to many scholars the origin of this significant craft in India may be traced back to the Zhob and the Kulli cultures which are known to have flourished in Baluchistan in the first half of the

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1. G.C.M. Birdwood, Indian Arts, Part II, London, 1884, p.387ff.

third millennium B.C. It is in the terracotta figurines of the Zhob and the Kulli cultures that we recognise the earliest efforts at plastic activities in India. In their latest phases the Kulli and Zhob cultures appear to overlap with the Harappa culture of the Indus Valley, roughly belonging to the second half of the third millennium B.C. The Harappa culture had significant contacts with the Kulli culture on one hand and with the Zhob on the other, and a sequence of plastic tradition may apparently be recognised (PL. III, Fig.2).

The next important phase of terracotta art falls during the Harappan period when the potters played an important role in the then society. Besides the stone and bronze sculptures, the terracotta art in the urban Harappan culture seems to represent a popular plastic idiom of artistic expression for the commoner people. The Harappan terracottas which mainly consist of animal and human figurines are found in large numbers in the sites of Harappa culture. Besides Harappa and Mohenjo-daro, the most important sites from where Harappan terracottas have been recovered are Lothal (Dist. Ahmedabad), Rupar (Distt. Ambala) and Rangpur (Distt. Jhalawar). Apart from terracotta cakes these sites have also yielded terracotta human and animal figurines[1].

During the Post-Harappan period the terracotta art suffered a set back due to some reason or the other. A good number of Post-Harappan sites have been excavated, but only from Nagda (Distt. Ujjain, Madhya Pradesh) a few terracotta animal figurines have

1. S.K. Saraswati, A. Survey of Indian Sculpture, Calcutta, 1957, pp.1-13; Sir John Marshall, Mohenjo-daro and the Indus civilisation, 1931; M.S. Vats, Excavations at Harappa, 1940; Stuart Piggot, Prehistoric India, 1950; Indian Archaeology 1953-54 - A Review, pp.6-7, 1954-55, p.12, 1955-56, p.7 and 1956-57, p.16.

been recovered. From the nature of limited distribution it may be assumed that the craft did not flourish during this period.

The next important phase of Indian terracotta art may be ascribed to the Maurya age. The terracottas of this age are mainly hand-modelled and represent complete figures in the round. Only the faces appear to be pressed from the moulds. The most important centres of Mauryan terracottas are Pāṭalīputra (Distt. Patna), Bulāndī Bāg (PL.III, Fig.3), Bhiknāpāhārī, Sonepur and Golakhpur in Bihar (PL.III, Fig.4), Rupar (Distt. Ambala), Kauśāmbī (Distt. Allahabad), Mathurā and Rājghāṭ in Uttar Pradesh, Ujjain in Madhya Pradesh, Tamluk (Distt. Midnapore) and Pokhārnā in the District of Bankura, West Bengal[1].

The terracottas with moulded faces and modelled bodies are followed by miniature plaques, each bearing a figure or figures in relief, entirely produced from moulds and then touched up and finished before firing. Such plaques have come up from various ancient sites of India and a large proportion of them may be placed in the Śuṅga - Kushāṇa period, roughly falling between second century B.C. and third century A.D. The most important sites which have yielded notable examples of Śuṅga - Kushāṇa terracottas are Kauśāmbī, (Distt. Allahabad), Tamluk (ancient Tāmralipti, Distt. Midnapore) (PL.IV, Fig.1), Basārh (ancient Vaiśālī), Rupar (Distt. Ambala), Kumrāhār (Distt. Patna), Nevasa

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1. S.K. Saraswati, op-cit, pp.104-109; Stella Kramrisch, "Indian Terracottas", Journal of the Indian Society of Oriental Art, Vol.VII, 1939; K.P. Jayaswal, "Terracottas Dug Out At Patna," Journal of the Indian Society of Oriental Art, Vol.III, 1935, p.126; Indian Archaeology - A Review, 1953-54, p.6, 1954-55, p.15, 1956-57, p.19 and 1957-58, pp.36, 48 and 50.

(Distt. Ahmednagar), Prakash (Distt. West Khandesh), Purānā Qilā (New Delhi), Nāgārjunakoṇḍā (Distt. Guntur), Kanauj (Distt. Farrukhabad), Sonepur (Distt. Gaya), Ujjain (Madhya Pradesh), Chandraketugarh (Distt. 24-Parganas), Mathurā, Taxila; Ahichchhatrā, Bhiṭā, Rājghāṭ and Bāngarh[1]. From the nature of distribution it is evident that the terracotta art of this period did not flourish much in South India.

The terracotta art of the Suṅga-Kushāṇa period seems to represent a movement, parallel to the contemporary plastic art in stone, and bears the stamp and impress of the latter. "With well-modulated forms and smooth and sensuous contours the animated and lively terracotta figurines of this period supply an interesting picture of the varied secular life, rich in social content and significance"[2].

During the Gupta and the Post-Gupta periods also terracottas had been the vehicles of the artistic expression of the common people. Among the artistic productions of the period there is a fairly large quantity of terracotta objects recovered from various ancient sites in Āryāvarta. Among these, mention should made of such sites as Harwan in Kashmir; Sāhri Bāhlol, Takht-i-Bāhī, Jāmālgarhi, etc. in the Punjab; Hanumāngarh and Bikanir in Rajasthan; Brāhmanābād and Mirpur Khās in Sind; Pāwāyā in Madhya Pradsh, Sāheth-Māheth, Kāsiā, Kosam, Bhitārgāon,

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1. S.K. Saraswati, Op.cit pp.109-116; Indian Archaeology - A Review, 1953-54, pp.7, 9-10, 1954-55, pp.13-14, 20 and 23, 1955-56, pp.10 and 19 and 1956-57, pp.19, 22 and 30; E.H. Johnston, "A Terracotta figure at Oxford", Journal of the Indian Society of Oriental Art, Vol.X, 1942, pp.94-102; A.K. Coomaraswamy, "Archaic Indian Terracottas", IPEK, 1928, P.71 and K.G. Goswami, Excavations at Bangarh, Calcutta University, 1948, pp.18-19.
2. S.K. Saraswati, Op.cit p.116.

Bhiṭā, Ahichchhatrā (PL.IV, Fig.2b) and Rājghāṭ in Uttar Pradesh; Basārh and Kumrāhār in Bihar, and Mahāsthān (PL.IV, Fig.2a), Tamluk, Bāngarh, Chandraketugarh, etc. in Bengal.[1] It is evident from the above list of the findspots of terracottas that they are more abundant in the Gaṅgā-Yamunā basin. It is significant to note that they are conspicuous by their absence in the country to the south of the Vindhyas.

Apart from the usual categories, terracotta during the Cupta and the Post-Gupta periods came to be employed in architectural decoration. Carved bricks and tiles, with vegetal, human and animal motifs, have come from Harwan (Kashmir), Hanumāngarh and Bikanir (Rajasthan), Brāhmanābād and Mirpur Khās (Sind), Sāheth-Māheth, Bhitārgāon, Rājghāṭ, and Kāsiā (Uttar Pradesh), Chausā (Bihar), Mahāsthān (Bengal) and other places. Further terracotta plaques with figures of divine and semi-divine beings, mythological seenes, popular stories and scenes of everyday life were used to decorate the walls of temples and other religious establishments (PL.IV, Fig.3). In such cases terracotta art may be compared to similar contemporary plastic practices in stone.[2]

During the mediaeval period terracottas may have been used in architectural decoration, but we do not have sufficient examples to show the use of this craft in the socio-religious life of the people. Among the abundant artistic productions of the previous periods excepting the Post-Harappan period we have seen that there is a fairly large quantity of terracotta objects recovered from

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1. S.K. Saraswati, Op.cit, p.170; Indian Archaeology - A Review, 1953-54, p.10, 1954-55, p.20 and 1957-58, p.52.

2. S.K. Saraswati, op.cit, pp.171-173.

various ancient sites, but during this period only a few sites such as Pāṭaliputra (Distt. Patna) and Rājghāṭ (Uttar Pradesh) which have yielded a few examples of terracotta art. From the limited distribution it appears that the types of terracottas during this period were not varied, and most probably the terracottas of this period mainly consisted of carved bricks and tiles representing vegetal, human and animal motifs.

During the eighteenth and nineteenth centuries also the terracottas are not found in the forms of dolls and toys, figurines, images of divine beings, etc. They are mainly found to have been used as plaques, carved bricks and tiles in the temple architecture. This is probably due to the reason that with the introduction of structural practices in the field of architecture from the mediaeval period onwards there began an increased activity in brick constructions, and the scope of terracotta art was naturally varied.

In modern times the terracottas play an important role in the socio-religious life of the people. The contemporary potter produces different types of terracotta objects such as dolls and toys, ritual figurines and other decorative specimens which cater the needs of the common as well as the sophisticated people of the society. Now-a-days terracottas are considered to be one of the rejuvenated crafts in the country. Both the village and the urban potters produce different types of terracotta objects which are used by all sections of people for utilitarian and decorative purposes.

The important centres of terracotta art now-a-days are Goalpara in Assam (PL.V,Fig.1), Bargarh (Distt. Shambalpur) in Orissa (PL.V, Fig.2), Patna (Distt. Patna), Hazaribagh (Distt. Hazaribagh), Purnea (Distt. Purnea), Barkona (Distt. Purnea), Manihari (Distt. Purnea), Singhbhum (Distt. Singhbhum), Ranchi (Distt. Ranchi) andDarbhanga (Distt. Darbhanga)in Bihar (PL.V, Fig.3), Panchmura (Distt. Bankura) (PL.V, Fig.4), Narajole (Distt. Midnapore), Katalia (Distt. Murshidabad), and Rajgram (Distt. Bankura) in West Bengal, and Jagdalpur (Distt. Bastar) in Madhya Pradesh.[1] Besides these centres terracottas are also made in some places in Gujarat and other parts of the country. From the nature of distribution it appears that the terracotta art is more popular in the eastern region than in any other parts of India.

The present day terracottas mainly consist of painted dolls and toys, human and animal figures and other miscellaneous objects which are mainly used for decorative purposes. Non-painted terracottas are also not rare, but these are generally used as ritual offerings.

The brief survey of potter's craft through the ages reveals the fact that this craft like other traditional crafts of India has also retained its age-old characteristics which are still noticeable in a good number of specimens produced in different places. Even to-day, in almost every village in the

1. Information based on the Photographic Collection of the Office of the Registrar General, India, New Delhi.

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country, the potter can be seen sitting by his primitive wheel, moulding the swift revolving clay by the natural curves of his hands and turning out the daily requisites of village life. It may be that our mechanised age with its emphasis on competition and cheap commodity production have given a cruel beating to this sumptuary craft, but still the Indian potter maintains uniformity and tradition in the beauty of form, harmony of colouring and surface decoration, together with a perfect unity of purpose.

2. Stone-cutter's Craft.

The stone-cutter's craft is one of the most ancient crafts in India. The origin of the craft may be traced as far back as the second half of the third millennium B.C. when the Harappa culture has bequeathed to us several remarkable pieces of sculpture in stone as well as in bronze. In the first group belong two stone statuettes from Harappa and in the second group fall the limestone statues from Mohenjo-daro. Of the two Harappa statuettes, the male torso in red stone represents a well-known piece of sculpture (PL.VI, Fig.1). The head and hands of the figure, made of separate pieces, were fitted through the socket-holes down the neck and the shoulders. Two large circular depressions in front of the shoulders, apparently hollowed out by a tubular drill, were perhaps intended for inlay of circular ornaments. The other Harappa statuette represents a dancing figure and is executed in a dark grey slate. The head and the hands, separately affixed through the socket-holes in the neck and the shoulders, are missing, and the legs broken away.

The stone sculptures from Mohañjo-dṛo appear to be a different class altogether. These sculptures are more formal in appearance and seem to belong to a hieratic tradition. They are all executed in comparatively soft stoṇe, usually lime stone and alabaster. The detached heads in limeStone are very interesting because of the reason that they present striking dissimilarities in facial types, suggesting some attempts perhaps at portrait likenesss. But the examples are so mutilated that it is difficult to arrive at any definite conclusion on this point.

The examples of stone-cutter's craft are wanting during the period falling between the Post-Harappan and the Pre-Mauryan epochs. It is difficult to believe that the powerful traditions of stone-cutter's craft of the earlier age died out altogether, and it is not unlikely that the products of the intermediate period still lie hidden under the soil. In any case, the link between the stone-cutter's craft of the Sindhu Valley and that of the Mauryan period is missing and the development of the craft only starts under the patronage of the imperial court, specially of Aśoka. From this period onwards the stone cutter's craft in India really saw the hey day of its glory throughout the succeeding ages.

The best specimens of the stone cutter's craft belonging to the Maurya period are furnished by a number of monolithic columṇs with their majestic animal capitals found in Bakhira (near Basārh or Vaiśālī), Rāmpurwā, Lauriyā Nandangarh, Rummindei, Saṁkiśya, Sārnāth, Sāñchī and other places. All the Maurya

columns are chiselled out of grey Chunar sandstone and have a lustrous polish due to the application, perhaps of silicious varnish on the stone.

The stone-cutter's craft of the time of the Śuṅgas and Kāṇvas is best represented in the bas-reliefs on the railings of Bhārhut, Bodh-gayā, Sāñchī, Amarāvatī and other sites. These bas-reliefs provide a clear picture of contemporary Indian life and attitude towards life, as conceived in early Buddhism. The Śuṅga-Kāṇva craftsman in the words of N.R. Ray appear "to delight in the handling of the human figure; the joy of a new discovery seems to urge them on to depict the human body in every conceivable position and attitude. In Bhārhut the attempt is still full of efforts; the individual parts of the body are shown clearly and distinctly, but they are not always linked integrally. In Bodh-gayā, the parts reach an integration and the body moves more freely and becomes a living entity. Indeed, technically as well as from the point of view of visual perception, Bodh-gayā is a step forward from Bhārhut. Reliefs are less crowded, all non-essentials being left out."[1]

In Western India the stone-cutter's craft of the Śuṅga-Kāṇva idiom flourished at Bhājā and Kārle. The large rock-cut reliefs of Bhājā in the Western Ghāṭs are executed with an expensive vitality, while the Bhājā sculptures are chastened by the vigorous discipline of fluid and rhythmical design.

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1. N.R. Ray, Chapter XX-B: Sculpture, in the Age of Imperial Unity, Edited by R.C. Majumdar, pp.513-514.

During the period between first century B.C. and fifth century A.D. the stone-cutter's craft very much flourished at Gandhāra, Mathurā, Jaggayyapeta, Amrāvatī, Nāgārjuṇakoṇḍā, Goli, etc. The Gandhāra artists who were foreigners got patronage from the Kushāṇa Kings. The subject matter of their art though predominantly Buddhist, but many of the motifs in the sculptures are of either Western Asiatic or Hellenistic origin (PL.VI, Fig.2). "From the Indian point of view, the importance of Gandhāra art lies in the fact that here one can see how a phase of Indian life, religion and iconography looked like in a foreign eclectic garb."[1]

From about the beginning of the Christian era the sculptors belonging to the Mathurā school became active and begun producing for centuries magnificent and varied examples of stone crafts (PL. VI, Fig.3). At a later stage they could even export images to such centres as Central Asia and Taxila on the one hand, and Śrāvastī and Sārnāth on the other. The Mathurā sculptures, from pre-Kushāṇa times through the Gupta period, were all carved from the red sandstone quarried at Sikri, near the Kushāṇa capital. The sculptors of Mathurā undoubtedly deserve credit for creating the earlist, entirely Indian representations of the Buddha. The making of an image of the Buddha involved much more than the mere carving of a human effigy. The Mathurā image-makers had to reproduce the mudrās or hand gestures that came to be associated with various actions and events in the career of Śākyamuṇi.

The earliest specimens of sculptural art from the Krishṇā-Godāvarī delta, known as Veṅgi, hail from Jaggayyapeta and

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1. N.R. Ray, op.cit. pp.521-522.

Amarāvatī and comprise a number of carved marble slabs, presumably stūpas and railings. The Veṅgi region carried on the tradition of early Indian Art, and serves as a link between the earlier art of Bhārhut, Bodh Gayā and Sāñchī on the one hand and the latter Gupta and Pallava art on the other. The marble reliefs from the various sites of Veṅgi depict the Buddhist legendary cycle in all its details. The sensuousness of Veṅgi is much more refined, elegant and sophisticated, lifted to a subtler plane, which is due not a little to a complete mastery of an advanced technique.

The stone-carvers of Amarāvatī produced brilliant examples of stone craft some of which show a relationship to the school of Mathurā. The Amarāvatī figures with their attenuated, indolent grace are in every case a refinement of the rather coarse and sensual concept of beauty developed by the Kushāṇa sculptors. Stylistically the Amarāvatī sculptors have a fondness for a very complicated arrangement of figures and settings in a number of planes. This deep cutting that transforms panels and medallions into stage boxes might be regarded as a natural development out of the technique of the Sāñchī carvers. The ivory-like delicacy and precision of the carving make the Amarāvatī reliefs 'the most voluptuous and the most delicate flower of Indian sculpture'.[1]

The stone-cutter's craft reached its zenith during the time of the Gupta rulers who extended their imperial hegemony over the greater portion of Northern India. During the Gupta period the craftsmen were very much interested in the execution

1. N.R. Ray, Chapter on sculpture in the Age of Imperial Unity, Bharatiya Vidya Bhavan, Vol.II, 1960; A.K. Coomaraswamy, History of Indian and Indonesian Art, London, 1927; Stella Kramrisch, Indian Sculpture, London, 1933; N.R. Ray, Maurya and Suṅga Art, Calcutta, 1945 and Benjamin Rowland, The Art and Architecture of India.

of human figure in the round and experienced certain distinct transformations in respect of modelling. The strong physical and naturalistic rendering, characteristic of the previous phase was subdued and gave place to a ratified and idealised modelling of the human form. The unique sculptural findings from Mathurā (PL.VI, Fig.4) and Sārnāth (PL.VII, Fig.1) not only testify to the great technical skill of the image-makers of the age, but also signify the Gupta classical tradition reverberations of which may be felt in the artistic activities throughout the country, in the North as well as in the South. In Madhyadeśa the influence of the classical tradition of Sārnāth spread rapidly. The sculptural finds from Khoh (Nagodh, Madhya Pradesh), Besnagar and the sculptures from the Śiva temple at Bhumārā (Madhya Pradesh) are characterised by the same plastic treatment as we find in the Sārnāth sculptures. In Malwa also the contemporary plastic idiom belonged to the unified Gupta classical tradition.

The influence of Sārnāth made itself felt in Eastern India also. Several sculptures from different parts of Eastern India specially the standing image of Buddha from Bihārail (Distt. Rājshāhī, North Bengal), recall the sublimity of the Sārnāth conception in a greater degree.

The classical influence was not confined within the Gupta domains proper, but spread further in the West and in the South. In the West it was the Mathurā idiom that was generally followed. The Govardhana dhāraṇa panel from Māndor and the door panel from

Nāgarī, both in Rājputānā, belong, no doubt, to the Gupta classical ideal.

From the beginning of the classical phase the Deccan has been the home of significant stone craft. Sculptural remains of the fifth century A.D. are no doubt very few in the Deccan, but from the sixth century there appears to have been a prolific activity in stone-carving. The rock-cut reliefs of the caves at Bādāmī represent eminent productions of stone-cutter's craft of the period. Among other examples of stone-carving mention may be made of the reliefs of the Buddhist caves at Ajaṇṭā, Kārle, Aurangābād, Kānherī, etc. which in treatment appear to be nearer to the Sārnāth ideal. Aihole was also another important centre of stone-carving in the Deccan. In the sixth and the seventh centuries many temples were erected at this spot under the patronage of the Chālukya kings of Bādāmī.

During the Post-Gupta period the stone cutter's craft followed a routine course. With the decline of the classical ideal local predilections gradually came to the fore leading to the formation of regional schools. Even in the Gaṅgā-Yamunā Valley, that had been the centre of the highly intellectual Sārnāth idiom, signs of numbness in respect of artistic practices were noticed. In Eastern India the plastic traits of the Gupta classical norm are found much subdued and the sensuous and emotional import of the Eastern trend generalised and ratified to a certain extent. Moreover, an impact of the popular indigenous idiom is not ceable in a general heaviness and coarseness of plastic texture. "The popular indigenous idiom

represents an art of dynamic action, while the Gupta classical norm that of calm and contemplative repose. It is the meeting of two opposing ideals in the sphere of art that ultimately leads to the creation of the hieratic Pāla school. The transition from the classical to the mediaeval phase is a gradual process and in Eastern India this process is more clearly discernible than in any other region".[1]

In Central India the remains of stone craft of the Post-Gupta phase are few and far between. There are, however, sufficient indications of widespread artistic activities, scattered throughout the different parts of the modern state of Madhya Pradesh. The impetus to temple - building activity in this region, noticed since the Gupta period, must have been accompanied by plastic practices. The few known sculptures belonging to the seventh-eighth centuries A.D. signify a gradual disintegration of definitive contours together with a certain coarsening of treatment. These are, no doubt, the tendencies of the Post-Gupta trends in the whole of Āryāvarta. Heavy and broadened forms with a condensed plasticity distinguish the art of Central India of this phase. In the West, In Rājputānā and Gujarat few examples of sculpture are extant now of this phase; but whatever records are available indicate a plastic trend not far removed from that of Central India.

Artistic activities of the stone-cutters of the Deccan in the Post-Gupta period are mostly of the rock-cut order. The rock-cut mode, recognised in a rather primitive fashion at Bhājā,

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1. S.K. Saraswati, A Survey of Indian Sculpture, Calcutta, 1957, pp.155-156.

is seen to unfold its possibilities at Udayagiri and Bādāmī and to reach its final creative perfection in the caves at Ellorā, Aurangābād and Elephanta. 'With rocks as material and caves as the setting for sculptures' the potentialities of this distinctive mode are fully explored. The Brahmanical caves at Ellorā contain outstanding pieces of sculptures which illustrate the rock-cut mode in the height of its expression. The last great achievement of cave sculpture in the Deccan is perhaps to be found in the beautiful carvings of the grottos of Elephanta, an island situated not far from Bombay. Here the stone-cutter's rock-cut plastic tradition reaches a supreme perfection in mighty forms, solid and rounded in volumes and almost elemental in their bearings.

The classical phase of stone-cutter's craft declined about the middle of the eighth century A.D. which may be regarded as marking the transition from the classical to the mediaeval phase of Indian stone-cutter's craft.

During the mediaeval period the stone-cutter's craft was greately influenced by Tantricism which permeated almost every important form of religion of the day. As a result the products specially the sculptural objects reflected truly the beliefs and practices of the period and, as such, gradually became more and more exclusive, and practically lost all touches with the general tenor of the life of the common people. The innumerable cult images, the temple wall carvings and the figure sculptures appear to be less hieratic and more relaxed, unhampered, as the craftsmen were mainly guided by canonical regulations.

In the mediaeval phase the stone-cutter's art movements in the different regions are found to be separated from one

another. Nevertheless, all styles traverse a path that is, more or less, uniform. With their derivations from the classical idiom, the provincial styles slowly move apart as the local factors come to be more and more emphasised. Uninformed by any personal vision or individual experience the craftsmen in each art province usually maintain a high level of craftsmanship, and their works are distinguished generally by a mechanical grace and elegance. In the later phases, in the eleventh and twelfth centuries, the exaggerated tendencies towards elaboration and ornamentation lead to an overburdening in which the form itself is lost in a maze of details. The products, particularly of the twelfth, testify to a complete desiccation of every earlier inspiration and the failure to discover anything new. The end comes with the Islamic conquest of Northern India about the close of the twelfth century.

The abundant output of stone-cutter's craft during the mediaeval period admits of a division into a number of movements, defined according to the following geographical regions: Eastern India, Gaṅgā-Yamunā Valley, Central India, Western India, Punjab and the Western Himalayan tracts, the Deccan and the Tamil land. Each of these regions develops a distinctive plastic style of its own.

In Eastern India, Bengal and Bihar, under Pala and Sena rule, constitute one artistic zone and Orissa another. The movements in these two zones are, to a certain extent, allied, as both continue to draw their inspirations from the storehouse of

the classical tradition. In Orissa the temple sculptures, culminating in the magnificent figures of Koṇārak, occupy a conspicuous position in the history of mediaeval Indian art. Herein the classical concept of the early phase, along with its urge for spontaneous naturalism and sensuous import, may be seen to have been at work.

The Gaṅgā-Yamunā Valley has yielded very few specimens of stone-cutter's craft, possibly on account of the depredations of the political turmoils from which the territory has suffered in successive ages. The few extant examples from Sārnāth and other places indicate that the mediaeval style in this area was, to a very great extent, allied to that of Bihar and Bengal.

Central India has been a great centre of artistic activities from rather early times. In the mediaeval period the Central Indian craftsmen appear to have been influenced by characteristic features of art traditions of both Eastern and Western India. The heavier physiognomical form and ampler plastic volume seem to have been reminiscences of the earlier plastic trends in this part of the country. With an increasing stagnation of modelling, the form, in spite of ample curves and volumes and a certain amount of definition, loses in plastic elegance and sensibility. The result is a stiffened and mechanical grace which, despite a conscious stamp of technical perfection fails to impress. The temple sculptures also share these craracteristics in a general way.

The Western province of mediaeval Indian stone cutter's art comprises of Rājputānā, Guǰarat and Kathiawar. It is in this

region that the impact of the mediaeval concept is more emphatically felt, particularly from the tenth century onward. In the cult images the classical concept is extremely thin. The temple sculptures, on the other hand, exhibit a certain amount of relaxation, but still the impact of the mediaeval is more strongly felt than in other regions.

Extant examples of mediaeval stone cutter's art in the Punjab hill states seem to register two traditions existing side by side. In this isolated region the Gupta plastic idiom seems to have survived throughout the mediaeval phase, while from the eighth century onward there appear sculptures which record the impact of the specific mediaeval concept in their mechanical compositions with sharp and incisive outlines and petrified plastic content, often flattened and elongated gesture. In Kashmir, varied traditions, from the Hellenistic one of Gandhāra to the Eastern Indian Pāla idiom, may be found to have been at work.

In the Deccan there is a vigorous artistic activity in connection with the architectural movement under the aegis of the different dynasties of kings holding political power in this region. But the brilliant days of plastic expression seem to have been over. The movement in the mediaeval phase, continues in a mechanical way with no spark of life, so to say. Ultimately in the later Chālukyan phase there emerges an extremely florid style which reaches an emphatic expression during the Hoysāla regime.

In the far South, i.e. in the Tamil land, there are, however, momentous productions that illustrate a brilliant culmination of the classical idiom as modified by the Pallavas. The Cholas supplant the Pallavas and inherit their predecessors' art tradition. In the hands of the Chola craftsmen the classical idiom acquires a new interpretation which adds further to its potentialities. In the subsequent centuries, though the treatment is slightly hardened, the tradition continues without any sign of exhaustion till a rather late period.

Contemporary Stone-carving

The stone-cutters still play an important role in the socio-economic life of the people. They produce different types of stone articles such as cups, saucers, knife handles, paper weights, beads, bangles, necklaces, bracelets and other ornaments, flower vases, boxes, plates, candle-stick stands, brackets, lamp stands, and images of gods and goddesses which are used by the people for utilitarian, decorative and religious purposes.

In India the chief centres of stone-carving are Udaipur, Bikaner, Jaipur, Ajmer, Jodhpur, Dholpur, Bharatpur and Jaisalmer, all in Rajasthan; Agra, Mathurā, Mirzapur, and Banaras in Uttar Pradesh; Chana, Gwalior and Bhandara in Madhya Pradesh; Ahmedabad and Kathiawar in Bombay State; Belur, Halebid and Somnathpur in Mysore, and Warangal and Golconda in Andhra Pradesh. Stone work is also widely found in Orissa, Puri being famous for carvings of dancing female figures (PL.VII, Fig.2), gods and goddesses. The art has been carried to a stage of perfection and exquisite

figurines are produced for general sale. Even the women are experts at this and a large number of figures are produced annually for trade in the local bazars. In some parts of Orissa, a black chlorite is found and this also is used for carving.

3. Wood-carving

Wood-carving is one of the very ancient crafts of India. In constructing places, temples and houses, wood appears to have been the main material. Historians have noted that the palaces of the great Maurya King Chandragupta at Pāṭalīputra which surpassed in splendour the royal residences of Susa and Ekbatana were all made of wood. Percy Brown goes on to say, "Of the fortifications surrounding this great capital city of the Mauryan empire nothing has survived except fragments of the wooden ramparts unearthed at Bulāndī Bāgh, near Patna, the beams of which by their size prove that the Greek envoy's account of its dimensions was by no means exaggerated".[1] The antiquity of wood is further established by excavations of the Maurya Period carried out by the Archaeological Survey of India which has unearthed remains of wood structures erected on a number of massive teakwood platforms.[2] An upper portion of the Mauryan stockade referred to above can be seen at the Indian Museum, Calcutta.

Whereas the Mauryan structures confirm the undoubted antiquity of wood as a standard material for constructive architecture and decorative art in ancient India, its adoption in

1. Percy Brown, Indian Architecture (Buddhist and Hindu), 1956, p.6.
2. Annual Report, Archaeological Survey of India, 1912-13, p.76.

stone is more than amply proved by the earlier Buddhist cave-temples or chaityas and their ancillary buildings, monasteries or vihāras for their monks, which have reproduced in their construction all the ancient forms of wood work. In the words of Benjamin Rowland : "As many authorities have pointed out, the barrel vaulted chaitya-halls of the Buddhist period, the rock-cut cave-temples of Western India, are imitations of free-standing buildings in which the barrel roof was constructed of interlocking wooden ribs covered with thatch. In many of the cave-temples of Western India, although the interior is really a cave cut from the living rock, the duplication of the wooden original is carried to the point of affixing actual wooden ribs to the socle of the solid stone roof. Such latter features of Hindu and Buddhist architecture as the horse shoe-shaped chaitya arch presumably had their origin in the Vedic period".[1]

Evidence of the oldest known remains of Indian wood-work can also be found at the framing at the entrance to one of the big chaityas at Kārlē. The pillars are quite plain and severe like those of the earliest caves; while the capitals or brackets are shaped into pendant lotus and tasselled forms, often massed one above the other, and sometimes provided with lateral struts carved as figures of horsemen or elephants.[2] Another important example of ancient wood-carving has been found at Arikamedu, an archaeological site near Pondichery, South-East India. The wood-carving belonging to the first century B.C. or early first century

1. Benjamin Rowland, The Art and Architecture of India (Buddhist-Hindu-Jain), 1959, p.21.

2. A.K. Coomaraswamy, The Arts and Crafts of India and Ceylon, 1913, Chapter VI, pp.163-164.

A.D. is roughly fashioned with its central portion scooped out, resembling a cumbrous shuttle, possibly a toy-boat.[1]

We do not have notable examples of wood work of the subsequent periods until we come to the late mediaeval period. During this time the art of wood-carving rejuvenated and flourished in a variety of forms in a few places of India specially in Gujarat. The elaborate carvings on wall panels and niches, door-frames, pillars, gateways, domes and facades of some of the Jain temples of Gujarat viz. Shāntināth temple (1390 A.D.) (PL.VII, Figs.3 & 4), Pārshanāth temple (sixteenth century A.D.), Ajitnāth temple (eighteenth century A.D.) (PL.VIII, Fig.1), and Swāminārāyan temple (early nineteenth century A.D.), Ahmedabad and Chintāmaṇī temple (sixteenth century A.D.), Surat and Wādī Pārshanāth temple (1594 A.D.) (PL.VIII, Fig.2), Patan which are still noted for their diversity of expression and variety of ornamentation. Even to-day, wood-carving in residential buildings has been such a common feature of houses in Gujarat that one has ceased to be conscious of its existence and lost all measure of its excellence. It had been the very life and soul of the people who had an innate sense of appreciation of all that was artistic. Doors, windows, jambs, balconies, walls, brackets, lintels, arches, architraves, capitals, ceilings and supports formed the various objects of decoration which gave ample opportunity to the wood-carver to exhibit his artistic ingenuity.[2]

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1. Ancient India, No.2, July 1946, pp.104-105, fig.44, 1.

2. R.K. Trivedi (ed), Census of India, 1961, Vol.V, Gujarat, Part VII-A, "Wood Carving of Gujarat", pp.7, 39 and 47-49.

Even during the nineteenth-twentieth century carving wood appears to have been done in architecture as well as in making furniture and household utensils. The most notable centres of wood-carving during the nineteenth-twentieth century are Madras, Salem, Anantpur, Malabar, Thanjavur (PL.VIII, Fig.3), Cuddapah, Vizagapatam, Tanjore, Tirupati (PL.VIII, Fig.4), Travancore, Trichinopoly, Haladgi, Raidrug, Nellore, Madura, Trivandrum, (PL.IX, Fig.1), Udiyaghir, Karnul, Coimbatore, Kondapalli (PL. IX, Fig.2), Kistna, Godāvarī and South-Kanåra in the Madras Presidency; Dabhoi, Vasu, Sojitra, Pitlad, Pattan, Sidhpur, Vadnagar, Baroda, Surat, Ahmedabad, Nāsik, Billimora and Bombay in the Bombay Presidency; Mysore, Sorab and Sagar in Mysore, Kamam and Zelgandal in Hyderabad, Deccan; Rewa, Gwalior, Alipura, Nagpur and Ratlam in Central India; Sikar, Fatehpur, Lachmangarh, Jhunjnu, Chirawa, Nawal-garh, Singhana, Bikanir, Indore, Jaipur, Shekhawati, Dholpur, Jodhpur and Ajmir in Rajasthan; Bhera, Batala, Amritsar, Chiniot, Jhelum, Rawalpindi, Hissar, Lahore, Sialkot, Hoshiarpur, Kartarpur, Jallandhar, Ludhiana, Kasur and Shapur in the Punjab; Delhi and Kashmir; Bareilly, Bijnor, Bulandshahr, Aligarh, Azamgarh, Farukhabad, Saharanpur, Ghazipur, Amroha, Lucknow, Mainpuri, Mathurā, Budaun, Agra and Nagina in Uttar Pradesh; Monghyr, Gayā and Patna in Bihar.[1]

Wood-carving for architectural purposes has been practised in many towns and villages in India. There is no doubt that wood-

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1. R.J. Mehta, The Handicrafts and Industrial Arts of India, 1960, pp.48.51; T.M. Abraham, Handicrafts in India, 1964, pp.61-73 and T.N. Mukherji, Art Manufactures of India, Calcutta, 1888, pp. 43-46, 232-240 and p.249.

carving in relation to architecture is of very ancient descent although we have no surviving examples of past work due to the perishable nature of the material. But it can be assumed that in early ages, wood-carving was widely used for the purposes of architectural decoration, and it is likely that the carved panels and window screens found in the earliest rock-cut temples of Ajaṇṭā, Nāsik, Kārlē, Mahābalīpuram, etc. manifest an origin from carved wooden proto-types. Even to-day, examples of superb craftsmanship in architectural wood-carving can be seen in Gujarat, Kathiawar, East and West Punjab, Kashmir, Uttar Pradesh and Rajasthan. The highly elaborate and detailed carvings of the temples and palaces of Mysore, Madurai and Bellary testify to an ancient art that could create in wood the effect of sculpture in stone.

4. Ivory Work

Like other traditional crafts of India ivory-carving is definitely a very ancient craft, for it is certain that it was practised in this country during the Harappan period. Different types of ivory objects such as jar-stopper, hair-pin, comb, (PL. IX, Fig.3), dice, (PL.IX, Fig.4), vessel, awl, needle, curious piece shaped like a fish, cubical and cylindrical gamesman, batton, rod, roundel, cup, handle, kohl stick, shaft, cone, baluster, etc. have been found at the Harappan sites viz. Mohenjo-daro, Harappa, Lothal (Distt. Ahmednagar, Gujarat), and Kalibangan (Distt.

Ganganagar, Rajasthan).[1] From the finds it appears that ivory craft played an important role in the social and economic life of the people of the Harappan period.

During the Post-Harappan period examples of ivory craft have been found only at two archaeological sites viz. Chirand (Distt. Saran, Bihar) and Pāṇḍu-Rājār Dhibi (Distt. Burdwan, West Bengal[2]). From these two sites dice, arrow-heads, styluses and comb have been recovered. The existence of ivory craft during the Port-Harappan period is further corrobarated by the evidence from the Vedic literature. For example, a passage from the Aitareya Brāhmaṇa may be of great interest to us: "They recite the Śilpas. These are the works of art of the gods (deva - śilpānyateshām); imitation of these works of art, here is a work of art accomplished, an elephant (hastin), a goblet (kaṁso), a garment (vāsaḥ), a gold object (hiraṇyam), a mule chariot (aśvatārī rathaḥ); a work of art is accomplished in him who knows thus".[3] According to Motichandra hastiśilpa here should not mean training of elephants, but the art of ivory carving. Along with the other arts mentioned it was no ordinary art, but an art of the gods, named apparently for its ritualistic connotation.[4]

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1. E.J.H. Mackay, Further Excavations at Mohenjodaro, New Delhi, 1938, Vol.I, pp.324, 421, 432-33, 439, 538-542, 557, 561-64 and p.573; Sir John Marshall, Mohenjodaro and Indus Civilization, Vol.II, 1931, p.557; M.S. Vats, Excavations at Harappa, 1940, Vol.I, pp.116-117, 158 and 459-61; Indian Archaeology 1956-57, A Review, New Delhi, 1957, p.16.
2. Indian Archaeology - 1962-63, A Review, New Delhi, 1965, pp.6 and 43.
3. A.B. Keith, Aitareya Brāhmaṇa, Harvard University Press, 1920, VI, 27.
4. Motichandra, Ancient Indian Ivories, Prince of Wales Museum Bulletin, No.6, 1957-59, p.4 ff.

During the period ranging between seventh century B.C. and third century B.C. examples of ivory craft have been recovered or reported to be in existence in a good number of sites such as Rupar (Distt. Ambala, Punjab), Kapilavāstu (probably Piprawa in Basti Distt. Uttar Pradesh), Prabhas Patan (Distt. Sorath, Gujarat), Taxila (noth-west of Rawalpindi) (PL.X, Figs.1 and 2), Nagda (Distt. Ujjain, Madhya Pradesh (PL.X, Fig.3), Ujjain (Distt. Ujjain, Madhya Pradesh), Nagal (Distt. Broach, Gujarat), Chandraketugarh (Distt. 24 Parganas, West Bengal), Awra (Distt. Mandasor, Madhya Pradesh), Kayatha (Distt. Ujjain, Madhya Pradesh), Benares (Uttar Pradesh) and Sonpur (Distt. Gayā, Bihar[1]). The ivory specimens either recovered from excavated sites or referred to in ancient texts mainly include stopper, casket, hair-pin, comb, dice, awls and medals, bangle, pendant, human figure, ear-reel, beds and bed-legs, collyrium or kohl sticks, handle, antimony rods, arrow-heads, seal, etc. So far it is known from literary sources Benares was one of the significant centres of ivory work. The industry was located in a particular portion of the city which was known as the ivory-workers' street (Dantakāravīthi)[2]. It is also said in the Sīlavannāga Jātaka[3] that a forester, tempted by the ivory of Sīlavannāga visited the ivory workers' bazar at Benares where ivory was being worked in diverse forms and shapes. In the Guttila Jātaka[4] it is mentioned that the

1. Ancient India, No.9, 1953, pp.124 and 132; Mahāvastu, II,420; Indian Archaeology 1953-54, p.6, 1955-56, p.14, 1956-57, pp. 17 and 27-28, 1957-58, p.36, 1959-60, pp.14, 24 and 51, 1961-62, pp.11-12 and 1964-65 (Cyclostyle copy), p.33; Lalit Kalā, Nos. 1-2, 1956, p.121; Sir John Marshall, Taxila, Vol.II, 1951, pp. 653-56 and 666; N.C. Bandyopadhayaya, Economic Life and Progress in Ancient India, 2nd Edition, Calcutta University, 1945, p.245.
2. Sīlavannāga Jātaka, No.72; See also E.B. Cowell (Editor), The Jātakas, Vol.I, London, 1956, pp.175-176.
3. Ibid.
4. Guttila, 243.

ivory-merchants of Benares were moving to Ujjain. This literary reference may be taken to be an authentic one on the basis of archaeological data available with us. Recent excavations carried at Ujjain have yielded among other ancient crafts specimens a unique ivory comb which may be considered to be a positive proof of the prevalence of ivory craft at Ujjain. From the wide distribution of the craft it appears that the contemporary people were very fond of ivory objects and they used the craft both for utilitarian and decorative purposes.

During the period between second century B.C. and third century A.D. ivory work appears to have occupied a significant place in the socio-economic life of the people. This is evident not only from actual finds of ivory specimens at different archaeological sites, but also from different literary sources which refer to the existence of this craft in a few places. The notable findspots where ivory objects have been found or reported to be in existence are Taxila (north-west of Rawalpindi), Nagda (Distt. Ujjain, Madhya Pradesh), Prabhāspāṭan (Distt. Sorath, Gujarat), Ujjain (Distt. Ujjain, Madhya Pradesh), Malwa (Central India), Nagal (Distt. Broach, Gujarat) (PL.X, Fig.4), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh), Masaon (Distt. Ghazipur, Uttar Pradesh), Chandraketugarh (Distt. 24-Parganas, West Bengal), Ter (11 miles to the north-north-east of Osmanabad, Maharashtra) (PL.XI, Fig.1), Pāṭalīputra (Patna, Bihar), Kondāpur (43 miles north-west of Hyderabad, Andhra Pradesh), Arikamedu (near

Pondicherry), Nevasa (Distt. Ahmednagar, Maharashtra), Prāgjyotiṣa (Assam), Sankaran (Distt. Vizagapatnam, Andhra Pradesh), Begram (the ancient Kapiśa, Mod. Kafiristan), Dharanikota (Distt. Guntur, Andhra Pradesh), Daśarnā (Eastern Malwa, Madhya Pradesh), Vidiśā (Bhilsā, Mod. Besnagar, Madhya Pradesh), Ayodhyā (Uttar Pradesh), Mysore and Dantapura (probably Dantan in Distt. Midnapore, West Bengal).[1]

The ivory objects produced during this period mainly consist of hair-pin, comb, die or gamesman, dice, awl, bangle, armlet, pendant, human and animal figure, handle, sword-handle and mirror-handle, antimony rod or kohl stick, toy-furniture or miniature chest, daggar, knife, disc, stick, ring, band and decorated plaque including panel, seal, figure of Buddha, etc.

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1. Sir John Marshall, Taxila, Vol.II, 1951, pp.653, 656, 658-59 and p.663; Indian Archaeology 1955-56, pp.11 and 14, 1956-57, pp. 17 and 27-28, 1957-58, p.36, 1959-60, pp.51-52, 1960-61, p. 21, 1961-62, p.58, 1962-63, p.19 and 1964-65 (Cyclostyle copy), pp.5, 77 and 82; Ancient India, No.2, July 1946, p.108, No.4, July 1947 - January 1948, pp.79-87 and No.9, 1953, p.132; Motichandra, "Ancient Indian Ivories", Prince of Wales Museum Bulletin, No.6, pp.20-21 and 31-36; Lalit Kalā, No.8, October 1960, pp.7-14; K.P. Jayaswal, "An Early Ivory", Journal of the Indian Society of Oriental Art, IV, 1936, p.75; Mahābhārata, II, 47.14; Motichandra, "Geographical and Economic Studies in the Mahābhārata: Upāyana Parva", Lucknow, 1945, p.58; Annual Report, Archaeological Survey of India, 1907-08, pp.170-71; J.Hackin and M.J. Hackin, Researches Archaeologiques a Begram, 2 Vols., Paris, 1939; J. Hackin and others, Nouvelles Richerches Archaeologiques a Begram, 2 Vols., Paris, 1954; K.A.N. Sastri (edited), A Comprehensive History of India, Vol.II, 1956, p.432; A.N. Bose, Social and Rural Economy of Northern India (cir. 600 B.C. - 200 A.D.), Vol.II, Calcutta, 1945, pp.212-213; The Periplus of the Erythraean Sea, Sections 56 and 62; Rāmāyana II, 83, 12; A.K. Coomaraswamy, The Arts and Crafts of India and Ceylon, 1913, Chap. VII, p.175.

Of all the important sites of the period special mention may here be made of Begram (the ancient Kapiśa, Mod. Kafiristan) which has yielded most outstanding ivory examples such as bands and decorated plaques including panels. During excavation ten plaques and bands of ivory beautifully ornamented and decorated with human figures were recovered. Besides there were also found large ivory panels representing in high relief the figures of Yakshīs or river goddesses (PL.XI, Fig.2). The motifs of Begram ivories bear very close resemblance to the Kushāṇa art of Mathurā, and in their style and execution, the Begram ivories may be considered as the superb examples of the art of ivory-carving in ancient India.

From the wide distribution of the craft it is apparent that during the Śuṅga-Kushāṇa period the ivory carver's art reached its zenith probably due to the royal patronage or the impetus it received from the indigenous and foreign traders, specially the Greeks who were carrying on prosperous trades on the Western Coast of India. The Periplus of the Erythraean Sea categorically mentions the names of Ter and Ujjain from where merchandise had to be brought to Barygaza (ancient Bṛigukachchha, the modern Broach) for export to foreign counties. Muziris, Bacare and Nelcynda had also a flourishing trade in ivory with Rome.[1] It is quite possible that ivory was one of the main articles of export during this period.

During the subsequent periods between fourth century A.D. and fifteenth century A.D. ivory work may have persisted

along with other traditional crafts, but its importance was not so much realised as was done in the preceding ages. During the period between fourth century A.D. and 750 A.D. ivory objects have been recovered only from a few places like Kashmir (PL.XI, Fig.3), Masaon (Distt. Ghazipur, Uttar Pradesh), Chandraketugarh (Distt. 24-Parganas, West Bengal) and Māheth (Distt. Bahraich, Uttar Pradesh).[1] From the nature of limited distribution it is apparent that the craft could not prosper so much as it flourished in the previous age. The ivory objects of this period mainly consist of human and animal figures, rings, game pieces, casket, seal, etc. In the Harshacharita of Bāṇabhaṭṭa it is mentioned that the presents to Harṣa from Bhāskarvarman of Assam included among other jewellery ivory-ear-rings inlaid with pearls obtained from the forehead of sea-elephants.[2] This shows that Assam was one of the important centres of ivory craft during this period.

During the next period i.e. between 751 A.D. and 1100 A.D. the distribution of ivory craft also appears to be very much limited (PL.XI, Fig.4). Only some figures of Buddha, bangles, a human figure and a three-tiered stūpa have been recovered from Kashmir, Chandraketugarh (Distt. 24-Parganas, West Bengal), Rupar (60 miles north of Ambala, Punjab),

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1. The Art of Greater India, Los Angels, 1950, p.45; Motichandra, Ancient Indian Ivories, Prince of Wales Museum Bulletin, No.6, 1957-59, pp.37-46; Indian Archaeology 1958-59, p.56 and 1964-65 (cyclostyle copy), p.77 and Ancient India, No.9, 1953, p.145.
2. V.S. Agarawala, Harshacharita (Hindi), Patna, 1953, p.170. See also B.K. Barua, A Cultural History of Assam, Vol.I, 1951, p.95.

Indragarh (Distt. Mandasor, Madhya Pradesh), Hastināpura (Distt. Meerut, Uttar Pradesh) and Bengal.[1] Of all the centres of ivory-carving of this period Kashmir has yielded some outstanding figures of Buddha carved in deep relief, almost in the round. Another notable example of ivory work of the period is the three-tiered stūpa from Bengal. The piece, complete with columns, canopies, thrones and niches, is adorned with fifty-six figures, sixteen of them in animal form, the rest being gods from the Mahāyāna pantheon.

During the next period falling between 1101 A.D. and 1500 A.D. the ivory craft is found to be practised only in a very few places of India. Of the centres such as Hastināpura (Distt. Meerut, Uttar Pradesh), Dwārakā (Distt. Jamnagar, Gujarat), Orissa and Cambay (on the Gujarat Coast), Orissa may be taken to be one of the important centres of ivory-carving of the period.[2] The

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1. Ancient India, No.9, 1953, p.124, Nos.10 and 11, 1954 and 1955, p.91; Indian Archaeology 1958-59, p.28; Artibus Asiae, VII, 1937, p.202; Sir Aurel Stein, Ancient Khotan, Vol.I, pp.209, 222; Motichandra, "Ancient Indian Ivories", Prince of Wales Museum Bulletin, No.6, 1957-59, pp.47-50 and Sherman Lee, "An Early Pāla Ivory", Journal of the Indian Society of Oriental Art, XVII, 1949, pp.1-5.

2. Ancient India, Nos.10 and 11, 1954 and 1955, p.91; Z.D. Ansari and M.S. Mate, Excavations at Dwārakā, Poona, 1966, p.41; Motichandra, "Ancient Indian Ivories", Prince of Wales Museum Bulletin, No.6, 1957-59, pp.53 and 60; J.E. Van Lohuizen-de-Leeuw, "Indian Ivories with Special Reference to a Mediaeval Throne Leg from Orissa", Arts Asiatique, VI (1959), pp.195-217; Stella Kramrisch, "Early Indian Ivory Carving" Philadelphia Museum of Art Bulletin, LIV, No.261, 1959, pp.56-66; Duārte Bārbosā, Vol.I, pp.135-42 and J.N. Chowdhuri, "Commerce and Industry in the Pre-Mughal Period", Indian Historical Quarterly, Vol.XXIV, No.2, 1948, pp.127-128.

ivory throne-leg representing a gajasiṁha from Orissa is really a master-piece of mediaeval ivory-carving. J.E. Van Lohuizen-de-Leeuw has pointed out the closest similarity existing between the gajasiṁha and also an elephant clutching the pot-bellied Śabara warrior as depicted in the thirteenth century Koṇārak sculpture and this ivory throne leg. She has also quoted in this connection the inscription of the Jagannāṭha temple at Purī recording the gift of eight ivory thrones to the deity by Purushottamadeva (1467-1497) which confirms the existence of an important school of ivory-carving in Post-mediaeval Orissa.[1]

The ivory-carver's craft seems to have rejuvenated during the period between 1501 A.D. and 1800 A.D. From the nature of distribution it appears that the craft flourished in a good number of centres all over India. The important sites of the period from where ivory objects have been recovered are Pāṭalīputra (Distt. Patna, Bihar), Travancore, Goa, Karṇāṭak region, Lucknow (Uttar Pradesh), Benares (Uttar Pradesh), Vijaynagar (Mysore) (PL.XII, Fig.1), Orissa (PL.XII, Fig.2), Ashār Mahall (at Bijapur), Amber palace (Jaipur, Rajasthan), Mysore, Udaipur (Rajasthan), Bikanir (Rajasthan), Surat (Distt. Surat, Gujarat), Darbhanga town (Distt. Darbhanga, Bihar), Multan (now in West Pakistan), Kashmir, Jaipur (Rajasthan),

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1. Arts Asiatique, op.cit. pp.195-217.

Cambay (Gujarat), Tatta (in Sind, now in West Pakistan) and Bombay.[1]

The ivory examples of the period mainly consist of dice, decorative plaques, human figures, casket, throne leg, room of ivory, inlaid objects like bedsteads, door-ways, etc., settee back-rest and bangle. Paes (a Protuguese traveller) while describing a room in the Vijaynagar palace states, "In this house there is a room with pillars of carved stone; this room is all of ivory, as well the chamber as the walls, from top to bottom, and the pillars of the cross timbers at the top had roses and flowers of lotuses all of ivory, and all well executed, so that there could not be better, - it is so rich and beautiful that you would hardly find anywhere another such".[2] Terry in his "Voyage to the East Indies, 1655" while describing the people of India, writes: "Their skidl is like-wise exquisite in the making of cabinets, boxes, trunks and strandishes, curiously wrought, within and without, inlaid with elephant's teeth or

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1. Indian Archaeology 1955-56, p.23; Ajit Ghose, "Some Old Indian Ivories", Rupam, No.32, Oct.1927, pp.125, 127-128; Motichandra, "Ancient Indian Ivories", Prince of Wales Museum Bulletin, No.6, 1957-1959, pp.56-57 and 61-62; A.K. Coomaraswamy, The Arts and Crafts of India and Ceylon, 1913, pp.175-76 and 180; Robert Sewell, a Forgotten Empire, London, 1924, p.370; International Studio, February, 1925, p.384; Sir George Watt, Indian Art at Delhi, 1903, Calcutta, pp.179-180 and 189; H.M. Elliot and J. Dowson, The History of India as told by its own Historians(the Muhammadan period), Vol.I, pp.28 and 35; S.S. Kulshreshtha, The Development of Trade and Industry under the Mughals (1526 to 1707 A.D.), 1964, pp.64, 172 and 191; D. Pant, The Commercial Policy of the Moguls, 1930, pp.154 and 237 and Duārte Bārbosā, p.114.

2. A.K. Coomaraswamy, The Arts and Crafts of India and Ceylon, 1913, Chapter VII, p.175.

mother-of-pearl, ebony, tortoise-shell or wire; they make excellent cups and other things of agate or earnelian, and curious they are in cutting of all manner of stones, diamonds as well as others".[1] From the discriptions of Paes and Terry it is also obvious that during this period ivory craft was in a very flourishing condition, and probably received much attention both from the ruling class as well as the contemporary population.

During the nineteenth-twentieth century ivory-craft came to be recognised as one of the principal artifacts of the country. The important centres of this craft are reported to be Poona(Distt. Poona, Maharashtra), Sattara (Distt. Sattara, Maharashtra) (PL. XII, Fig.3), Tirupati (Distt. Chittoor, Andhra Pradesh), Godāvarī (Distt. Godāvarī, Andhra Pradesh), Broach (Distt. Broach, Gujarat), Udaipur (Distt. Udaipur, Rajasthan), Junāgarh (Distt. Junāgarh, Gujarat), Bhuj (Distt. Kutch, Gujarat), Amritsar (Distt. Amritsar, Punjab), Mahuva (Distt. Bhavnagar, Gujarat), Sylhet (Assam), Kāṇārā (Mysore), Sehwan town (Karachi), Surat (Distt. Surat, Gujarat), Delhi, Rājputānā, Jaipur (Distt. Jaipur, Rajasthan), Ajmir - Marwara, Alwar (Distt. Alwar), Bikanir (Distt. Bikanir), Pali (Distt. Pali, Rajasthan), Rewa (Distt. Rewa, Madhya Pradesh), Ratlam (Distt. Ratlam, Madhya Pradesh), Dhar (Distt. Dhar, Madhya Pradesh), Alipura (now in West Pakistan), Berhampur (Distt. Murshidabad, West Bengal), Mothrā (near the city of Murshidabad, West Bengal), Daulatbazar (near the city of Murshidabad, West Bengal), Ranshāgorgrām (near the city of Murshidabad, West Bengal),

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1. G.C. Dutt, A Monograph on Ivory-carving in Bengal, Calcutta, 1901, pp.1-2.

Hill Tipperah (Distt. Chittagong, now in Bangladesh), Dacca (now in Bangladesh), Calcutta, Panga (Kurigram Sub-division, Rangpur, now in Bangladesh), Kakunia (Distt. Rangpur, now in Bangladesh), Barabari (Distt. Rangpur, now in Bangladesh), Orissa, Balassore (Distt. Balassore, Orissa), Monghyr (Distt. Monghyr, Bihar), Patna (Distt. Patna, Bihar), Darbhanga (Distt. Darbhanga, Bihar), Baroda (Distt. Baroda, Gujarat), Karachi (now in West Pakistan), Kathiawar (Gujarat), Kutch (Gujarat), Travancore, Mysore, Vizagapatam (Andhra Pradesh), Patiala (Distt. Patiala, Punjab), Ludhiana (Distt. Ludhiana, Punjab), Multan (now in West Pakistan), Dera-Ghazikhan (now in West Pakistan), Gujranwala (now in West Pakistan), Hoshiarpur (Distt. Hoshiarpur, Punjab), Lahore (now in West Pakistan), Sialkot (now in West Pakistan), Bhera (now in West Pakistan), Indore (Distt. Indore, Madhya Pradesh), Kanpore (Uttar Pradesh), Benares (Uttar Pradesh), Pali (a station on the Jodhpur branch of the Rājputānā Railway, Rajasthan) and Trichinopoly (Madras).[1]

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1. Cecil L. Burns, A Monograph on Ivory-carving, 1900, pp.4-5 and 7-10; J.L. Kipling, Indian Ivory-carving, The Journal of Indian Art, London, July 1885, No.7 pp.50-52; Sir George Watt, Indian Art at Delhi - 1903, pp.175-185 and 187-191; T.N. Mukharji, A Rough List of Indian Art Ware, Calcutta, 1883, pp.6-7; W.W. Hunter, Statistical Account of Assam, Vol.II, Trubner & Co., London, 1879, p.34; G.C. Dutt, A Monograph on Ivory-carving in Bengal, 1901, pp-3-10; Official Report of Calcutta International Exhibition, Vol.II, 1883, p.5; T.N. Mukharji, Art Manufactures of India, 1888, Calcutta, pp.148-149 and L.M. Stubbs, A Monograph on Ivory-carving in the North-Western Provinces and Oudh, Allahabad, 1900.

The ivory objects of the period mainly consist of different types of decorative, utilitarian and ritual objects such as comb, bangle, mirror frame, casket, miniature door, stick, chessman, dice, work-box, scent-case, paper-cutter, card-case, elephant loaded with gun, paper-knife, figures of elephant, camel, dog, pig, buffalo, crocodile, deer and tortoise, boat, antimony box, sword-hilt, thumb-guard, models of bullock-cart and processions, images of Krishna (PL.XII, Fig.4), Vishnu, Durgā, Kālī and Jagaddhātrī, Jagannāth's car procession (PL.XIII, Fig.1), palanquin, plough with ploughman, locket and chain, ear-ring, figures of Washerman, Water-carrier, Peon, Porter, Tailor, Sepoy, Fakir and Policeman, elephant with howdāh, brush-back, money-counting board, small models of buildings, paper-weight and models of fruits such as almonds, mangoes, green, red capsicum pods, etc.

Among the notable centres of ivory-carving of the nineteenth-twentieth century special mention may here be made of Bengal, Travancore and Mysore which have produced a good number of excellent ivory examples bearing traditional characteristics in their line and form, style and execution. The principal centre of ivory-carving in Bengal has always been the district of Murshidabad. Mr. Inglis, the Commissioner for India, states, that the Murshidabad ivory manufactures were perhaps more admired than any other class of goods in the Indian Court, one chief merit being that the subjects were also purely original. They were more artistic than those of Ceylon and much cheaper.[1] The

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1. J.L. Kipling, Indian Ivory-carving, The Journal of Indian Art, London, July, 1885, No.7, p.51.

next important centre of ivory-carving is Travancore which has produced a lot of decorative and utilitrian objects. As it appears from the contemporary published sources, the Travancore ivories were basically traditional, though in the latter stage there were some modern (if not European) sentiments in the style and execution of the ivory products. The last well-known centre of ivory-carving of the nineteenth-twentieth century is Mysore which has produced fine examples of ivory work. Of all the ivory works, inlaying wood with ivory deserves special mention in this context. The skill displayed by the Mysore inlayers far excels that of Hoshiarpur and other localities in Northern India.

The survey of the ivory-works through the ages starting from the Harappan period down to the nineteenth-twentieth century makes it clear that this significant craft may have suffered some adversities in certain periods of Indian history, but at the same time it cannot be denied that it has also persisted through the ages along with other notable and traditional artifacts of the country.

5. Metal Image Casting by Cire-perdué Process

The founding of copper, brass and bronze by the cire-perdué process is universal in India and of high antiquity. The earliest known Indian bronze figurine made by cire-perdué process was perhaps discovered at Mohenjodaro where a highly developed urban civilization flourished in third millennium B.C. The excavations at Mohenjodaro have not yielded any moulds used for casting bronze and in the absence of such finds, it is difficult to be precise about the actual method of casting, viz. direct-

casting from moulds or the casting by cire-perdué process. The intricate patterns and designs reproduced in casting the 'dancing girl' would, however, indicate that most probably the 'lost-wax' process, was employed as direct casting from a mould would not produce a bronze of such a fine finish (PL.XIII, Fig.2). The assumption that the 'dancing girl' was made by cire-perdué process is also supported by some scholars like Chintamoni Kar[1], Ruth Reeves[2], C. Sivaramamurti[3] and Ajit Mookerjee[4]. Apart from the 'dancing girl' recovered from Mohenjodaro, two copper figurines probably made by cire-perdué process have also been recovered from Lothal, a prolific Harappan site in the district of Ahmadabad, Gujarat[5], Except for these figurines no other truly notable examples of Indian metal art produced by cire-perdué casting have come to light from the Harappan sites.

During the Post-Harappan and the period falling between seventh century B.C. and third century B.C. no significant example of Indian metal image executed by cire-perdué method has been recovered from any archaeological site. From this, however, it is not to be assumed that during this span of centuries the art of metal figure casting by the lost-wax process had gone completely underground in India. At Taxila, where Alexander the Great

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1. Indian Metal Sculpture, London, 1952, p.1.
2. Cire-perdue Casting in India, New Delhi, 1962, pp.19-20.
3. Indian Bronzes, 1962, p.4.
4. Indian Primitive Art, Calcutta, 1959, p.37.
5. Indian Archaeology 1957-58, p.13.

(327-325 B.C.) halted just before the battle with Porus, Sir John Marshall, who excavated the ruins in Sirkap, reports that cire-perdué metal casting techniques were known and used at that time to produce gold and copper ornaments and other objects, but were preponderantly of Hellenistic design styles.[1] However, between second century B.C. and third century A.D. metal casting by cire-perdué process had reached a high level of technical excellence as demonstrated by the notable finds of bronze figures and images recovered from Amarāvatī, Chausā (Bihar), Rupar, Mathurā, Nāgārjuna-Koṇḍā (Distt. Guntur) and Brahmapurī in Kolhapur, Western Deccan.[2]

During the Gupta and Post-Gupta periods (fourth century A.D. - 750 A.D.) the cire-perdué casting techniques were so much developed that an image like Sultānganj Buddha could be executed in so finest details (PL.XIII, Fig.3). This example is not only the largest, but probably the best of Gupta bronzes yet known. Among other sites from where Gupta and Post-Gupta bronze images made by cire-perdué process have been recovered special mention may here be made of Mathurā, Sārnāth, Mirpur Khās (Sind, now in West Pakistan), Sirpur (Distt. Raipur), Balaighat (near Mahāsthān, North Bengal), Akota (near Baroda, Gujarat), Vasantagadh

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1. Sir John Marshall, Taxila, Cambridge University Press, 1951, pp.40, 129, 570 and 572.

2. C. Sivaramamurti, South Indian Bronzes, 1963, pp.5, 13 and 69; V.A. Smith, A History of Fine Art in India and Ceylon, 3rd edition, revised and enlarged by Karl Khandalavala, pp.47-48 and pl.30, 40 and 40C.

(about 5 miles from Sajjana Road Station), Chhatarhi, Barmar and Chambi.[1] As regards Sirpur bronzes it may be pointed out that in some bronzes which were made by cire-perdué process, the sand in the interior was still adhering to the metal. On the strength of the number of images found in the excavation as also those accidently discovered previously at Sirpur in a hoard, it can be said with fair certainty that an important school of craftsmen flourished here, and their workmanship was greately influenced by late Gupta plastic tradition. Moreover, it may also be noted that during these periods the cire-perdué bronze casting processes were first recorded in the Śilpaśāstras, the technical-cum-canonical texts used by the metal craftsmen in their production of bronze images.

During the period between 751 A.D. and 1100 A.D. bronze images made by cire-perdué process have been recovered from a good number of places specially in South India. The art of bronze casting by cire-perdué process reached its zenith during this period because of the reason that the Pāla rulers of Bengal and Bihar, the Pallava and the Chola rulers of the South encouraged this art to continue. The important findspots of the period from where notable bronze images have been recovered are Śrāvastī

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1. C. Sivaramamurti, Indian Bronzes, 1962, Bombay, pp.5-7, 16 and 27; V.A. Smith, A History of Fine Art in India and Ceylon, op.cit. pp.5, 17, Pl.III-A and Pl.61-B; Indian Archaeology 1954-55, p.24; Lalit Kala, Nos.1-2, April 1955 - March 1956, "Bronze Hoard from Vasantagarh", by U.P. Shah, pp.55-65 and Ruth Reeves, Cire-perdué Casting in India, op.cit., p.19 ff.

(Uttar Pradesh), Kurkihar (PL.XIII, Fig.4) and Nālandā (Bihar), Chambā, Barisal (now in Bangladesh) (PL.XIV, Fig.1), Sagardighi (Distt. Murshidabad, West Bengal), Sirpur and Khinkhini (Central India), Vasantagarh (about 5 miles from the Sajjana Road Station), Śravan Belgolā (Mysore), Bellur (Mysore), Kadiri (Distt. Mangalore, Mysore), Tiruvarangulam (former Pudukkottai State), Kuram (Distt. Chingleput, Madras), Poruppumettapatti (Distt. Madurai, Madras), Gangaikondācholapuram (Distt. Tiruchirapalli, Madras) and Kilapuddanur, Nallur, Sivapuram, Okkur, Kilayur, Paruttiyur, Dharmapuram - ādhīnām, Turaikadu, Nidur, Vadakkupanayur, Peruntottam, Sirupanayur, Senniyanvidudi, Velankanni, Tiruvelvikkudi, Semangalam, Tiruvengadu, Vellalagaram, Tanquebar, Hariśchandrapuram, Melaperumballam, Siyali, etc. all lying in the district of Tanjavur, Madras.[1] As it appears the most popular images of this period were Śiva Naṭarāja (PL.XIV, Fig.2), Tārā and Buddha, Saraswatī and Bolarāma, Vishnu, Pārshanātha, Mahishāsuramardinī, Rāma, Kālī, Pārvatī and Ganesha. Of great aesthetic and technical importance are the hollow and solid cast copper and bronze images of Buddha which, poured out of the foundaries of the Buddhist monasteries at Nālandā in Bihar during the eighth-ninth century and paved the way for the handsome copper gilt bronzes of Buddha

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1. Memoris of the Archaeological Survey of India, No.11; V.S. Smith, A History of Fine Art in India and Ceylon, 3rd Edition, Pl.III-B, 112A and III-C; C. Sivaramamurti, Indian Bronzes, op.cit pp.18-19, 23 and 26-27; U.P. Shah, "Bronze Hoard from Vasantagarh", Lalitkala, Nos.1-2, pp.55-65 and C. Sivaramamurti, South Indian Bronzes, 1963, pp.69-79.

that developed during the eighth-twelfth centuries at Kurkihar in Bihar. The Sirpur bronze Buddha images (eighth-eleventh centuries A.D.) also indicate the massive wave of bronze and copper images executed in both hollow and solid casting techniques which the Pāla rulers encouraged to continue. The style of the ninth-tenth century Bengal bronzes was different from that of South India which generally featured one or, at the most, two deities arranged on a single pedestal. The metal artisans of the Pāla period, particularly those of Bengal produced intricate compositions of several figures. As regards South Indian bronzes of this period it may be noted that the most creative period of South Indian icon production was during the Chola rule in the South which existed upto the thirteenth century A.D. From the nature of distribution it appears that most of the images were produced in the Tamil country and all are executed by the cire-perdué solid casting method.

During the period between 1101 A.D. and 1500 A.D. the image making by cire-perdué process was also prevalent in many parts of the country specially in the South. In North India the most important centre of bronze-icon making was Kurkihar in Bihar, while in South India the icon production was mainly confined to the Thanjavur district, Madras, though some images have also been recovered from South Arcot District, Madras, Kunnandarkoil (former Pudukkottai State), Kālahastrī (Andhra Pradesh) and Warangal where Kākatiya school gave rise to a new art style in metal art. As regards the important findspots of bronze images in the Thanjavur

district mention may here he made of Tiruvalanjuli, Konkodutta-vanitam, Kodikarai, Semangalam, Dharmapuram, Peruntottam, Togur, Nāgappaṭṭinam, Sikkal, Manjakkudi, Tirukkalar, Komal, Seyyannam, Sainapuram, Tirumullaivasal, Tirukkadayur, Sundaraperumalkoil and Arayankudi.[1] The images recovered from the places noted above mainly include bronze images of Durgā, Vishṇu, Aiyanar on elephant, Śiva, Bodhisattva Avalokiteśvara, Naṭarāja and Śivakāmasundarī, Ganeśa, Veṇugopāla, Chaṇḍikeśvara, Kaṅkāla, Kalaga Ṛishi, Kulottuṅga and Dīpalakshmī.

With the eclipse of the Cholas in the thirteenth century A.D., this period of metal image art merged into that of the less artistically distinguished one of the Vijaynagar period (fourteenth-sixteenth century A.D.). The Chālukyan (Deccan) and the Chola bronze styles had been developing side by side over the centuries but, nevertheless, going their own separate ways, and now both coalesced in the elaborate and highly conventionalized Vijaynagar images.[2]

During the period between 1501 A.D. and 1800 A.D. the art of image-making by cire-perdué process was mainly prevalent in South India though bronze images of different categories are found to have been made in different parts of the country. The important centres of metal casting in the South are Tirupati in Andhra Pradesh, Tiruvelvikkudi, Thanjavur, Madras and Madurai in the

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1. C. Sivaramamurti, South Indian Bronzes, op.cit., pp.69-80 and V.A. Smith, A History of Fine Art in India and Ceylon, 3rd Edition, op.cit., pl.113-B.
2. Ruth Reeves, Cire-perdue Casting in India, op.cit., p.24.

Madras State which have produced various bronze images the most popular of them being Śiva and Pārvatī, Kṛishṇadevarāya with his queens, Saiva saint and Dīpalakshmī.[1]

The art of cire-perdué casting which flourished some five thousand years ago still survives in many parts of India. Ruth Reeves in her book on "Cire-perdué Casting in India"[2] has not only recorded the techniques followed by the craftsmen in different parts of the country, but also given a list of important centres where the craft is practised. The notable centres of cire-perdué casting in India to-day as reported by Ruth Reeves are Rampur in Bankura district of West Bengal, Tatijharia, Ranchi, Lowadih and Hazaribagh in Bihar, Asnasol, Sorponkha, Pairakuli and Baripada in Orissa, Nagpur in Maharashtra, Jagdalpur (Distt. Bastar) in Madhya Pradesh (PL.XIV, Fig.3), Swamimalai (PL.XIV, Fig.4), Thanjavur and Madras city in Madras State and Tirupati in Andhra Pradesh. It is also reported that 50 families in Thanjavur district, 5 families in Tiruchirapalli district, 5 families in Madurai district, 10 families in Ramanathapuram district, 10 families in Chingleput district, 10 families in Tirunelveli district, 3 families in Coimbatore district, 8 families in Salem district, 3 families in South Arcot district, and 5 families in Kanyā Kumārī district are presently engaged in producing metal images of Hindu deities by the lost wax process. From the above

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1. C. Sivaramamurti, South Indian Bronzes, op.cit, pp.78-80.

2. Crafts Museum Series (edited by Ajit Mookerjee), New Delhi, 1962, pp.36-119.

statistics as well as nature of distribution it is evident that the artisans of South India have been truly dedicated practitioners of the art of cire-perdue casting since time immemorial. It may also be noted that in ancient India both cire-perdue solid and hollow casting techniques were employed virtually in all the metal casting centres; to-day the solid casting method is preponderantly practised in the South, while the hollow casting method is now largely practised in Central and Eastern India.

6. Textiles

Of all the crafts of India, textiles are certainly the oldest. The origin of the craft can be traced way back to the Harappan period. The discovery of fragments of finely woven madder - dyed cotton fabrics and bobbins at Mohenjodaro traces back the antiquity of Indian textiles to over 4000 years.[1] Recent excavations at Alamgirpur (Distt. Meerut, Uttar Pradesh) has also yielded fascinating evidence regarding cloth. The evidence was provided by impressions on a trough. The yarn seems to have been fairly fine, though not of uniform section, the technique being that of plain weave.[2]

During the Post-Harappan period the evidence of textile - weaving is found in one of the most remarkable finds from Nevasa, a Post-Harappan site in the district of Ahmadnagar, Maharashtra. The find, however, was that of a necklace of seventeen barrel -

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1. R.J. Mehta, The Handicrafts and Industrial Arts of India, p.95.
2. Indian Archaeology 1958-59, p.52.

shaped copper beads strung with thread, worn round the neck of a child buried in urns. A.N. Gulati, who examined the thread, is of opinion that it was of white silk, apparently spun from cocoons on a cotton nep. This is thus the earliest evidence of the use of silk in India. Further, the cotton nep indicates the spinning of cotton as well.[1]

During the period between seventh century B.C. and third century B.C. Sibi country (Sherkot?), Benares, Bengal, Madhura (Madurai), Aparānta (Konkan), Kaliṅga (Orissa), Vatsya (city of Kauśāmbī) and Mahīṣa (Māhiṣmatī - Mysore?) are reported to be famous for cotton and silk weaving.[2] The country of the Sibis was famous for its shawls and its cotton cloth was also of a high quality. In textile industry the choicest stuff were of Benares and Bengal. The fine muslin of Kāśī (Kāśikāsucivaṭṭha, Kāśikānī Veṭṭahānī) is a common reference.[3] A familiar simile is the Benares muslin of delicate finish on both sides, blue (or yellow

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1. Indian Archaeology 1959-60, p.28.

2. Mahāvagga, VIII, I, 29; Motichandra, Geographical and Economic Studies in the Mahābhārata: Upāyana Parva, Lucknow, 1945, pp. 93-94; A.N. Bose, Social and Rural Economy of Northern India (Cir: 600 B.C. - 200 A.D.), Calcutta, 1945, pp.225-228; K.A.N. Sastri, A Comprehensive History of India, Vol.II, 1956, pp.73 and 433; N.C. Bandyopadhyaya, Economic Life and Progress in Ancient India, University of Calcutta, 1945, p.242; R.N. Mehta, Pre-Buddhist India, Bombay, 1939, p.194; Jātaka II, 443-G.141, III, p.10, V, p.78-G.280 and VI, pp.49-G. 194, 50-G.225, 144-GG. 647-9.

3. Jātaka IV, 352, V. 377, VI. 47, 144 and Milindapañho I.

or red or white) in colour, blue (or yellow, etc.) in appearance and reflecting blue (or yellow etc.).[1] Kauṭilya notes that Madhurā (Madurai) produced the finest cotton fabrics.[2]

During the next period i.e. between second century B.C. and third century A.D. textile craft appears to have been practised in a good number of places like Benares, Kuṭumbara and Aparānta, Ariaca (Kathiawar and the adjoining inland country), Kaliṅga (Orissa), Argaru (Uraiyur), Māsulīpaṭam, Ujjain (Distt. Ujjain, Madhya Pradesh), Ṭagara (Dharur in the Nizam's territory), Ter (11 miles to the north-north-east of Osmanabad district of Maharashtra), Trichinopoly, Tanjore, Dacca (now in Bangladesh), Gujarat, and Kāverīpaṭṭinam.[3] References in the Mahābhārata, the Milindapañho, the Divyāvadāna and other works prove that the lower Ganges basin, Banaras, Kuṭumbara and Aparānta, as also the Tamil kingdoms in the far South were still famous for the production of textiles of different kinds.[4] Ariaca produced great quantities of cotton cloth out of its coarse variety of raw cotton as for foreign

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1. Dighanikāya XIV. iii.29; XXIII.iii.1; Majjhima Nikāya 77 and Aṅguttara Nikāya V.61f.
2. K.A.N. Sastri, op.cit., p.73.
3. K.A.N. Sastri, op.cit., 1956, pp.433-434; Divyāvadāna, p.29.6; Motichandra op.cit., 1945, p.112; Periplus of the Erythraean Sea, edited by Schoff, pp.42, 46-47; R.G. Bhandarkar, Early History of the Deccan, 1928, p.72; Motichandra, "An Ivory Figure from Ter", Lalit Kala, No.8, Oct. 1960, p.7; Motichandra, "The History of Indian Costume from 1st Cent. A.D. to the beginning of the 4th century." Journal of the Indian Society of Oriental Art, Vol.VIII, 1940, p.189; R.L. Mitra (edited), Lalitavistara, Calcutta, 1877, p.113 and Silappadikāram, V, p.110.
4. K.A.N. Sastri, op.cit., pp.433-434.

export. Some cotton cloth appears to have been manufactured in the upper Indus basin for export by way of the Indus.[1] In the Divyāvadāna[2] it is mentioned that dhotī (loin cloth) and dupaṭṭa (scarf) manufactured at Kāśī were famous. The Periplus of the Erythraean Sea (51)[3] reports that the ancient Ṭagara (Mod.Dharur) was noted for its fine muslins. From the same source it is also known that Trichinopoly and Tanjore produced muslin called 'Argaritic', and Māsulīpaṭam (Masaliā) made a great quantity of muslin. The finest muslin was, however, called 'Gangetic' and was manufactured in the Dacca district. The fine Indian muslin was called 'Ventus textiles' or 'Nebula'.[4] The Lalitavistara[5] refers to 'Paṭolaka' or variegated silk (vicitra Paṭolaka) which still retains its name in the 'paṭolā' sārīs of Gujarat. In the Silappadikāram,[6] it is mentioned that in the port town of Kāverīpaṭṭinam there were weavers (Kārukas) who combined in themselves the functions of a middleman and dealt in fine fabrics made of silk, fur and cotton.

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1. Ibid, p.434.
2. Divyāvadāna, p.29, 6. See also Motichandra, Journal of the Indian Society of Oriental Art, Vol.VIII, 1940, op.cit., p.194.
3. See also Motichandra, "An Ivory Figure from Ter", Lalit Kala, No.8 p.7.
4. The Periplus of the Erythraean Sea, edited by Schoff, pp.46 and 47. See also Motichandra, Journal of the Indian Society of Oriental Art, Vol.VIII, 1940, op.cit., p.189.
5. Lalitavistara, p.113, edited by R.L. Mitra, Calcutta, 1877. See also Motichandra, Journal of the Indian Society of Oriental Art, Vol.VIII, 1940, op.cit., 189.
6. V, p.110, See also Motichandra, Journal of the Indian Society of Oriental Art, Vol.VIII, 1940, op.cit., p.194.

The period falling between fourth century A.D. and 750 A.D. was also notable for textile industry. From the contemporary literary and epigraphic sources it appears that Mathurā (Uttar Pradesh), Gujarat, Rājputānā, Assam, Māndāsor (Malwa region), Lāṭa - Vishaya (Central and Southern Gujarat) and Benares (Uttar Pradesh) were famous for cotton and silk weaving.[1] The Harshacharita of Bāṇabhaṭṭa contains reference to the tye-dyed cloth. While describing the beauty of Mālatī, Bāṇa observes that she wore a gawn (Kañcuka) and underneath this gawn gleamed a petticoat (candātaka) of saffron tint and variegated with spots of different colours. Here the 'pulakabandha' refers to the famous tye-dyed 'cūdārī' or 'bādhanī' of Gujarat and Rājputānā.[2] During this period figured cloth was also manufactured in Assam. The presents sent by the ruler of Assam to Śrī Harṣa included pieces as smooth as birch bark (lehūrjatvak - komolāh jātī - paṭṭikah), or smooth figured silks (Chitrapaṭanām cha mrodiyasām)[3]. Silk weaving, as already noted was also practised in some other places like Māndāsor (Malwa region), Lāṭa-Vishaya (Central and Southern Gujarat) and

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1. Watters' Yuan Chawang i. 301-2; Harṣacharita of Bāṇabhaṭṭa, pp. 85, 214 and 261; Motichandra, "The History of Indian Costume from the 3rd to the end of the 7th Century A.D.", Journal of the Indian Society of Oriental Art, Vol.XII, 1944, pp.14-15; Māndāsor Stone Inscription of Kumāragupta and Bandhuvarman - edited by J. Fleet, Corpus. Ins. Indicarum, Vol.III, reprinted, 1963, pp.79-88.

2. Harshacharita, p.261. See also Motichandra, Journal of the Indian Society of Oriental Art, Vol.XII, 1944, op.cit., p.14.

3. Ibid, p.214.

Banares. The Māndāsor stone inscription of Kumāragupta and Bandhuvarman[1] mentions a guild of silk - weavers (pattavāyaśreṇī) and its prosperous finances as shown by its construction of an unequalled temple of the sun. From the reference to the silk - weavers guild of Māndāsor it is evident that many people were engaged in silk production. From the Harshacharita[2] it is ascertained that Benares was also another important centre of silk-weaving. The heavy brocade known as 'Kimkhāb' for which Benares is famous was known as 'puspapatta'.

For the next two periods falling between 751 A.D. and 1500 A.D. we do not have much information about the position of the textile craft in the socio-economic life of the people. So far it is known from the contemporary literature, Cambay (on the Gujarat coast), Kathiawar and Gujarat, Calicut and Delhi were notable for cotton and silk weaving.[3] Kathiawar, Calicut and Gujarat are reported to be famous for calico-dying and printing, while Cambay produced fine examples of silk cloth, coloured

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1. Edited by J. Fleet, Corpus Ins. Indicaram, Vol.III, op.cit., pp.79-88.

2. P.85. See also Motichandra, Vol.XII, 1944, op.cit., p.15.

3. Bārbosā, Vol.I, pp.135-142; R.J. Mehta, Handicrafts and Industrial Arts of India, 1960, pp.119 and 123; J.N. Chowdhuri, "Commerce and Industry in the Pre-Mughal Period", The Indian Historical Quarterly, Vol.XXIV, June, 1948, No.2, pp.127-128 and 132.

velvets of inferior quality, and velvety satins and taffeties. Of the state manufactory during the reign of Muhammad Tughlak Masalik says that 400 silk weavers were employed at Delhi to make stuffs of all kinds for the dresses and robes of honour and presents to the nobles. - - - - Five hundred manufacturers of golden tissues were engaged to weave gold brocades for the royal household and the nobility.[1] This appears that during the reign of Muhammad Tughlak silk-weaving received special attention from the royal authority.

During the period between 1501 A.D. and 1800 A.D. textile craft appears to have been existed in a good number of places like Golkonda, Māsulīpāṭan, Sironj, (in the State of Tonk, Rajasthan), Burhanpur, Berhampur (Distt. Murshidabad, West Bengal), Dacca (now in Bangladesh), Tanda (Distt. Fyzabad, Uttar Pradesh), Benares (PL.XV, Fig.1), Delhi, Broach, Cambay, Agra, Ahmedabad, Surat, Kasimbazar (Distt. Murshidabad, West Bengal), Patna, Kashmir and Lahore (now in West Pakistan).[2] Different types of textiles

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1. J.N. Chowdhuri, Indian Historical Quarterly, Vol.XXIV, No.2, 1948, op.cit., p.132; See also Wassāf - Elliot, Vol.III, pp. 356 and 578.

2. Jean Baptiste Tavernier, Travels in India, translated from the original French Edition of 1676 by V. Ball, 1889, Vol.I, pp. 50-52, 56, 66, 72 and 118, Vol.II, pp.3-4 and 50-52; R.J. Mehta, op.cit., p.119; R.K. Mukherjee, "The Economic History of India 1600-1800", Jour. of the U.P. Historical Society, Vol.XV, Pt.1, p.91; Travels of Sibastian Manrique, Vol.I, pp.44 and 56, Vol.II, p.156; Pupul Jayakar, "Cotton Jāmdānis of Tanda and Benares", Lalit Kala, No.6, October, 1959, pp.38-39; R.C. Majumdar, H.C. Roy Choudhuri and K.K. Datta, An Advanced History of India, 1953, pp.573 and 810; Pupul Jayakar, "A Seventeenth Century Satin Tissue Wall hanging from Ahmedabad," Lalit Kala, Nos.1-2, April 1955-March 1956, pp.108-112 and Āin-i-Akbari - translated by H. Blochmann, Calcutta, 1927, pp.93 and 98-99.

appear to have been manufactured among which special mention may here be made of painted cotton cloths called Kalamdār, coloured calicoes, muslin, satin tissue, jāmdānī cloth, paṭolā, shawls and some other varieties of cotton and silk fabrics. Jean Baptiste Tavernier[1] reports that the chites i.e. the painted cotton cloths, which are called Kalamdār, are of different degrees of beauty, both on account of the printing and the fineness of the cotton cloth. As regards muslin it is reported that very transparent muslins are exported to Persia, Turkey, Muscovie, Poland, Arabia, Grand Cairo and other places.[2] Tavernier also reports about silk manufacture at Kasimbazar, a village in the kingdom of Bengal, which "can furnish about twenty two thousand (22,000) bales of silk annually, each bale weighing one hundred (100) livres. The Dutch generally took, either for Japan or for Holland, 6000 to 7000 bales of it, and they would have liked to get more, but the merchants of Tartary and of the whole Mogul empire opposed their doing so, for these merchants took as much as the Dutch, and the balance remained with the people of the country for the manufacture of their own stuffs."[3] Tavernier also speaks of the paṭolās of Ahmedabad which are decorated all over with flowers of different colours. This is one of the profitable investments of the Dutch who do not permit any member of their company to engage in private trade in it. They are exported to the Philippines, Borneo, Jāvā, Sumātrā, and other neighbouring countries.[4]

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1. Travels in India, op.cit., Vol.II, 1889, pp.4-5.
2. Ibid, Vol.I, 1889, p.51.
3. Ibid, Vol.II, 1889, pp.2-3.
4. Ibid, Vol.II, 1889, p.3.

The Āin-ī-Akbari refers to Ahmedabad as being famous for the weaving of brocades, velvets and silks. Imperial workshops for weaving were established by the Mughal emperors from which came masterpieces in cotton, silk, velvet and brocade, with astonishing figures and patterns, knots and fashions.[1] From the same source it is also known that Kashmir was one of the important centres of shawl-weaving. "His majesty encourages, in every possible way, the manufacture of shawls in Kashmir. In Lahore also there are more than a thousand workshops. A kind of shawl, called māyān, is chiefly woven there; it consists of silk and wool mixed. Both are used for chirās (turbans), fotās (loin bands) etc."[2]

The textile craft seems to have reached its zenith during the nineteenth-twentieth century. From the nature of distribution it appears that the craft has not only been practised throughout the country, but has also played an important role in the socio-economic life of the people. Different types of traditional textiles either of cotton or of silk are found to have been manufactured, the most important of them being brocades, muslins, embroidered fabrics, tie-dyed and printed calico cloths and the patolās.[3]

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1. Āin-ī-Akbari, translated by H. Blockmann, Calcutta, 1927, pp. 93 and 98-99.

2. Ibid, p.98.

3. R.J. Mehta, The Handicrafts and Industrial Arts of India, 1960, pp.95-130; T.M. Abraham, Handicrafts in India, 1964, pp.127-147; T.N. Mukharji, Art Manufactures of India, Calcutta, 1888, pp.332-340, 349-358, 360-361, 364-367 and 373-376; Jamila Brij Bhushan, The Costumes and Textiles of India, 1959; S. Kamala Dongerkery, The Romance of Indian Embroidery, 1951; Sir George Birdwood, The Industrial Arts of India, 1880, and Sir George Watt, Indian Art at Delhi, 1904.

Brocades

Brocades are essentially textiles of silk in which ornamental enrichment is effected on the surface. Pieces woven with pure silk (amru) or silk and cotton (himroo) are also known as brocades. This inter-weaving of silk threads and gold wires in beautiful colours and floral designs produces the most gorgeous and the most fascinating of India's silk fabrics. During the nineteenth-twentieth century the important centres of brocades have been Murshidabad, Benares (PL.XV, Fig.2), Bhawalpur, Multan, Ahmedabad, Surat, Yeola, Poona, Aurangabad, Lucknow, Bhopal, Delhi, Tanjore, Tiruchirapally, Oudh and Madras. Benares acquired world fame for the excellent brocades in pure gold traditionally known as Kinkhābs. Surat produces the largest quantity of brocades in India. Due to the comparative cheapness of gold and silver threads, Surat stands at an advantage to other centres for producing brocade pieces. Oudh is another important centre for brocade weaving. The peculiarity here is that brocades here are made by weaving verses from the Kurān and the Bhāgvat Gītā. These pieces have much popularity among religious devotees and for religious purpose.

Muslins

Of all the hand-woven cotton textiles of India muslins have always been in great demand and freely exported since very olden times. No words can describe the beauty of muslins made by the deft hands of Indian weavers. So delicate and elegant that it is unbelievable whether they are made by hands. The chief

centres of muslin manufacture in the nineteenth-twentieth century are Benares, Dacca, Hyderabad, Jaipur, Mysore, Kotah, Gwalior, Arni, Indore, Madurai, Chanderi and Tanjore. The dorias or striped muslims are a speciality of Dacca, Gwalior, Hyderabad, Nagpur and some other places. From Nellore come the checkered muslins and the figured jāmdānī from Dacca. Mention may also be made of the embroidered muslins of Calcutta known as chikan, the printed muslins of Tiruchirāpallī (Trichinopolly), and the gold and silver printed fabrics of Gujarat, Jaipur, Hyderabad, and the Deccan plateau. Chanderi muslins have silk and gold in the border. North Arcot, Madurai, Tanjore and Ayampet in Madras have thriving trade in muslin. By the increasing tendency of people for fashionable cloths muslins have a prosperous future.

Embroidered fabrics

The craftsmen of India have always excelled in hand embroidery on cotton, silk, wool, velvet, even leather, and their creations have been a source of admiration. The kasīdā embroidery of Kashmir, the darning stitch phulkārī work of the Punjab, the embroidery of Kathiawar and kutch, the art of embroidering with gold and silver threads of Benares, the kānthās of Bengal, the chikankārī of Uttar Pradesh and rumāls of Chambā are still famous and desired throughout the world. The kasīdā embroidery of Kashmir is done either on silk or wool, with gay colours and varied desgins. The chief stitches employed are the stem, the chain and the satin stitch. The main centres for kasīdā are Srinagar, Shalimar, Vicharnag, Magam, Badgam, Nawshera, Zimmal, etc.

Phulkārī means 'flowering work'. The home of phulkārī is Punjab and the origin associated with the Jāṭs. The base of the embroidery is like coarse khaddar. The embroidery is done in a darning stitch from the back, each stitch being about quarter of an inch in length. The best phulkārīs were produced in the districts of Peshawar, Lahore, Montegomery, Sialkot, Jhelum, Firozpur, Rawalpindi, and Hazara all now in Pakistan, and the Amritsar (PL.XV,Fig.3), Jullundur, Hissar, Ambala, Karnal, Rohtak, Ludhiana, and the former Sikh states of Patiala, Nabha, Jind, Faridkhot, and Kapurthala. In certain parts of the Punjab like Hissar, in some of the Delhi areas, Gurgaon, Rohtak, etc. shīshādar phulkārīs used to be made regularly, embodying mirrior pieces within the embroidery.

In Kathiawar, Kutch, as well as in Sind (West Pakistan), both the darning and the chain stitches are used with exceptional skill. The glistening characteristic of Kathiawar embroidery is the lavish decoration with little mirrors. The embroidery of Kathiawar, Kutch and Sind is very similar and this is not surprising considering their geographical affinity. The distinctive embroidery of Kutch is known as the kānbi after the Kānbis (farm cultivators) and Āhirs (cowherds) who generally do it. Interspersed mirrors and interlaced stitches are the marked features of Kutch embroidery by which it is easily distinguishable from others. The embroidery of Sind manifests many forms due to multiple influences - the darning - stitch of the Phulkārī of the Punjab,

and the chain and interlaced stitches of Kutch, and even the use of tiny mirrors within the designs. The designs are simple and the colours are more subdued in comparison to those of lower Sind where the influence of Kathiawar and Kutch seems to have been greater.

The art of embroidering with gold and silver threads existed in India from a very early period. Delhi, Lucknow, Benares, Murshidabad, Ahmedabad, Surat, Aurangabad, Hyderabad, Bombay and Madras are important centres of this craft. Benares, Ahmedabad and Surat produce kinkhābs. This is done in making caps, blouses, kurtās, waist coats, sālwārs, and cushions. Kārchob is the name for proper embroidery in gold and silver. There are two varieties of kārchob embroidery. One is zārdozi, the name for the heavier and elaborate variety where stitches are very close to each other. The other one is kāmdānī, the name for less elaborate embroidery on finer fabrics.

The Bengali kāñthās (PL.XV, Fig.4) are embroidered warps made by women of all classes, both in West Bengal and East Bengal. Several old sārīs are placed one on top of the other and sewn together in common running stitches in white thread covering the entire field. Human and animal figures, floral and foliage symbols cover the surface. From the four corners trees of life reach out towards the centre piece. The commonly used colours are red, black, yellow and blue. Though made throughout Bengal, the majority of kāñthās come from Eastern Bengal, especially Mymensingh, Jessore, Khulna, and Faridpur.

Chikan work and the white embroidery on cotton, linen or silk are specialities of many places including Delhi, Agra, Lucknow, Kanpur, Benares, Allāhābād, Patna, Gayā, Calcutta, Dacca, Bhopal, as well as Peshawar and Quetta now in West Pakistan. The chikankārī piece presents a striking contrast by its disarming and direct simplicity. The traditional mode of dress and the climatic conditions of the Gangetic plain are best suited for this type of embroidery.

Among other embroideries mention may be made of the Chambā rumāls which are literally handkerchiefs, but really small shawls. Chambā rumāls are worked out in simple stitch on both sides. They are embroidered with themes from Indian mythology, scenes from the Mahābhārata and the Rāmāyaṇa, the rāslīlā of Rādhā and Krishṇa, as well as rāgas and rāginīs and Pāhārī miniature paintings, done in silk yarn on tussar cloth or fine cotton fabrics.

Tied and dyed fabrics

Tie-dyeing (bandhanī or bandhana) is one of the greatest masterpieces of Indian dyer's art. The art of tie-dyeing is most popular in Gujarat (PL.XVI, Fig.1) and Kathiawar, in Sind and Rajasthan. It is claimed that Rajasthan is the land of origin of this fairy tale craft. The main centres in Rajasthan are Jaipur, Jodhpur, Kotah, Silar, Ladnu and Sujangarh. There are traditional varieties of bandhanī dyeing, the gārcholā and the chunārī. The former is more elaborate of the two as far as the design is concerned. Generally, it has a ground of deep red, yellow or green. The chunārī is a delicate and lighter textile; the tie-dyeing is

restricted and scattered over the fabric in isolated dots or groups of dots, combined to form simple designs. Though the best bandhanī fabrics come from Gujarat and Rajasthan, a much cruder form of tie-dye work, mostly on thick calico, also comes from Assam, the Deccan, and many other parts of the country.

Printed Calicoes.

The "chites" or printed calicoes are rightly one of the most popular of the art-fabrics of India. In early times, the designs were entirely painted on with brushes or kalams, but later on northern Indian influence led to the use of wooden blocks. To-day the best quality kalamkārī is a product of the careful blending of block-printing and hand-painting, a process both complicated and laborious. The calicoes may be classified into three groups viz. bleached and unbleached calicoes, made everywhere in the country; and those woven with coloured thread; and printed calicoes or chintzes, printed either on a white or coloured ground. Lastly, there are the world - famous pālām-pores of Māsulipaṭam and other places, used as curtains, bed-sheets and canopies.

Calico-printing is very popular and widely practised in the country. The notable centres of this craft during the nineteenth-twentieth century have been Ahmadabad, Kaira, Baroda, Malegam, Kach and Broach in Bombay Presidency, Wallaja, Arcot, Mederpank, Timpur, Anantpur, Kumbākonum, Salem, Chingleput, Cuddapah, Coconāda, Trichinopoly and Godāvarī in Madras Presidency, Māsuli-paṭam and Eleimbedu in Chingleput Distt. Kālahastrī and Karnul in North Arcot Distt., Sanganir in Jaipur (PL.XVI, Fig.2), Bagru, Jaipur, Barar and Nayanagar in Ajmer Distt., Sambhar, Jodhpur,

Gwalior, Ratlam, Ujjain, Mundasur and Chanda in the Central Provinces, Kot Kamalia in Montegomery Distt., Sultanpur in the Kapurthala State, Lahore, Multan, Hassan, Abdal, Sialkot, Amritsar, Delhi, Kangra and Rohtak in the North-Western Provinces, Kasipur in Tarai Distt., Aligarh and Atrauli in Aligarh Distt., Agra, Muttrā and Brindāban in Muttrā Distt., Mainpurī, Allāhābād, Soran, Phulpur and Manda in Allāhābād Distt., Fatepur, Kalianpur and Jafarganj in Fatepur Distt., Canpore, Chandpur and Najibabad in Bijnor Distt., Shahjahanpur, Mirzapur, Muzafarnagar and Deoband in Saharanpur Distt., Khurja and Jahangirabad in Bulandshahr Distt., Bagpat in Meerut Distt., Etawa, Banda and Pailani in Banda Distt., Jaunpur, Benares, Farukhabad, Kanauj and Lucknow in Uttar Pradesh, Patna (PL.XVI, Fig.3), Darbhanga and Saran in Bihar and Calcutta in Bengal.

Paṭolās

Paṭolā is another form of tie-dyeing in which the warp and weft threads are separately tie-dyed before weaving. The colour harmony in the best paṭolās is always superb and the decorative details invariably treated with utmost aesthetic simplicity. To-day apart from sārīs, the paṭolā technique is also used for table covers, wall hangings, cloth for blouses and cholis, handkerchiefs, etc. One of the characteristics of the paṭolā is that the design appears the same on both sides of the fabric, the different colours merging gracefully together.

From very ancient times Gujarat appears to have been the principal centre of paṭolā weaving. The notable centres of paṭolā

weaving during the nineteenth-twentieth century are Surat, Patan (PL.XVI, Fig.4), Baroda, Cambay, Ahmadabad and Broach. Surat-made paṭolās differ from others with their green background of border and dark red field. In the Cambay pattern, a diaper is produced by a white line that forms meshes flattenad laterally. In the paṭolā of Patan there is no diaper, the pattern is laid sideways and the border stripes are carried within the field. The field colour in the Patan sārī is dark blue - green with the patterns in red, white and yellow.

The survey of Indian textiles through the ages leads us to suppose that the craft is of great antiquity and has been widely practised since very early times, though we have no surviving examples of work dating much before the sixteenth century, due to its perishable nature. To-day textile is one of the most important items in the Indian economy. It gives millions employment and income. Perhaps there is no other craft in India which has so much importance in the rural economy as textile.

7. Jewellery and Ornaments

The story of Indian jewellery and ornaments can be traced right back to the Harappan period. The people of the Indus valley, both rich and poor, used to decorate themselves with traditional jewellery and ornaments made of gold, silver, copper, bronze, shell and semi-precious stones. From the archaeological finds recovered from Harappa and Mohenjodaro, Lakhabaval (Distt. Surendranagar, Gujarat), Rupar (Distt. Ambala, Punjab), Kalibangan

(Distt. Ganganagar, Rajasthan), Rojoi (Distt. Madhya Saurashtra, Gujarat) and Alamgirpur (Distt. Meerut, Uttar Pradesh), we have a clear picture of the jewellery and ornaments used by the people of the period.[1] The notable types of jewellery and ornaments used during the period mainly consisted of ear-rings, nose-studs, finger-rings, pendants, bangles, wristlets, cones, bracelets (PL.XVII, Fig.1), armlets, hair-pins, fillets and beads of semi-precious stones.

During the Post-Harappan period the types of jewellery and ornaments appear to be limited in comparison with the preceding period. Only bangles, finger-rings, necklace and beads comprise the principal types of jewellery and ornaments of the period. Of the materials used, besides gold, mention may be made of copper, bronze, shell, glass and semi-precious stones which were also the main raw materials for the manufacture of jewellery and ornaments of the Harappan period.

The notable centres of jewellery and ornaments of this period from where specimens of gold beads, copper bangles and

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1. Sir John Marshall, Mohenjodaro and the Indus Civilization, Vol.II, 1931, pp.528-529 and Vol.III, pp.511-513, 519, 522, 527 and 531; R.C. Majumdar (ed.), The Vedic Age, Vol.I, 1965, pp.178 and 188; Indian Archaeology - 1953-54, p.6, 1954-55, pp.9 and 12, 1955-56, p.7, 1956-57, p.16, 1957-58, p.13, 1958-59, pp.19 and 52, 1959-60, pp.17-18, and 1960-61, p.32; Ancient India, No.3, pp.123 and 125, No.9, p.124, Nos.18 and 19, pp.143, 147, 149 and 152; M.S. Vats, Excavations at Harappa, 1940, Vol.I, pp.64 and 447 and Vol.II, p.63 and E.J.H. Mackay, Further Excavations of Mohenjodaro, Vol.I, 1938, pp.501, 505, 525-527, 529-30, 534-535, 537 and 539.

necklace, bronze finger rings, shell and glass bangles and beads of semi-precious stones have been recovered are Rangpur, Maski (Raichur Distt., Mysore), Nevasa (Distt. Ahmadnagar, Maharashtra), Brahmagiri (Distt. Chitaldrug, Mysore), Eran (Distt. Sagar, Madhya Pradesh), Hastināpura (Distt. Meerut, Uttar Pradesh), Rupar (Distt. Ambala, Punjab), Ahar (Distt. Udaipur, Rajasthan), Daimabad (Distt. Ahmadnagar, Maharashtra), Navdatoli (Distt. Nimād, Madhya Pradesh), and Sonepur (Distt. Gayā, Bihar),[1] etc.

During the next period falling between seventh century B.C. and third century B.C. specimens of jewellery and ornaments have been found from a good number of archaeological sites viz. Junapani (Distt. Nagpur, Maharashtra), Ujjain (Madhya Pradesh), Texila (20 miles north-west of Rawalpindi), Hastināpura (Distt. Meerut, Uttar Pradesh), Maski (Distt. Raichur, Mysore), Brahmagiri (Distt. Chitaldrug, Mysore), Eran (Distt. Sagar, Madhya Pradesh), Bahal (Distt. East Khandesh, Maharashtra), Broach (Gujarat), Śrāvastī (Distt. Gorakhpur, Uttar Pradesh), Sonpur (Distt. Gayā, Bihar), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh), Prakash (Distt. West Khandesh, Maharashtra), Vaiśālī (Distt. Muzaffarpur, Bihar), Chandraketugarh (Distt. 24-Parganas, West Bengal), Ahichchhatrā (Distt. Bareli, Uttar Pradesh), Nevasa (Distt. Ahmednagar,

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1. Ancient India, No.4, pp.263 and 269, No.9, p.124, Nos.10 and 11, pp.90-91 and 94, No.13, pp.106 and 114, and Nos.18 and 19, pp.143, 149 and 152; Indian Archaeology, 1954-55, pp.7 and 13, 1955-56, p.11, 1957-58, p.32, 1958-59, pp.17-18, 1959-60, pp. 14 and 28 and 1960-61, p.17

Maharashtra), Mathurā (Distt. Mathurā, Uttar Pradesh), Parkalam (Distt. Trichur, Kerala), Kausāmbī (Distt. Allāhābād, Uttar Pradesh) and Kaundanpur (Distt. Amraoti, Maharashtra)[1]. The types of jewellery and ornaments of this period mainly consisted of rings, bangles, necklace, and beads. The materials used besides gold appear to have been silver, copper, bronze, shell, glass and semi-precious stones. The gold ornaments recovered from a few archaeological sites mainly consisted of ring, bangles, bead and necklace, while the silver, copper and bronze ornaments found at different sites mainly consisted of a few necklaces, rings and bangles. The shell and glass ornaments specially bangles appear to have been used in a limited scale as evident from the nature of distribution. Shell and glass bangles were probably used by the common people who could not have afforded costly bangles made of metal. As it appears the semi-precious stone was one of the principal raw materials for the manufacture of jewellery and ornaments of this period. Semi-precious stones were generally used for making beads which were meant to be strung as necklaces, bracelets, etc.

The period falling between second century B.C. and third century A.D. may be regarded as the glorious period of the history of ancient jewellery and ornaments. During this period different

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1. Ancient India, No.4, pp.263 and 269, No.8 pp.12, 14-15, 35 and 37-44, No.9, pp.132 and 137-38, Nos.10 and 11, pp.91 and 94 and No.13, pp.112-114; Indian Archaeology 1954-55, pp.7, 12-13 and 15, 1955-56, p.10, 1956-57, p.18, 1957-58, pp.36 and 50, 1958-59, pp.48-49, 1959-60, pp.14, 19 and 51, 1960-61, pp.18 and 37 and 1961-62, pp.5, 29, 33-34 and 56 and Sir John Marshall, Taxila, op.cit., Vol.II, 1951, p.627.

types of jewellery and ornaments are found to have been used by the people. The gold ornaments mainly consisted of ear-rings, ear-stud, ear-pendants (PL.XVII, Fig.2), ring, bangles, beads, bracelets, armlet, amulet, necklace (PL.XVII, Fig.3) and girdle, while the silver ornaments only consisted of anklets (PL.XVII, Fig.4), amulets, beads and bangles. Besides gold and silver, copper, bronze, shell, glass and semi-precious stones were also used for the manufacture of jewellery and ornaments of the period. Of the copper ornaments mention may be made of rings, bangles and bracelets, while the bronze ornaments included ear-rings, finger-rings, bangles, bracelets, etc. Shell ornaments specially consisted of bangles and ear-studs, and glass ornaments mainly included bangles which were generally plano-convex and triangular in section. The last important material for the manufacture of ornaments of the period was perhaps semi-precious stone. From the nature of distribution of the semi-precious stone ornaments it may be easily presumed that their manufacture was really a flourishing household industry in this period. Beads of semi-precious stones which were meant to be strung as a necklace, bracelet or an armlet were also used in a very large s cale. This is evident not only from actual finds of beads at different archaeological sites, but also from representations in stone sculptures and terracottas belonging to this period.

The important finds pots of the period from where specimens of gold, silver, copper, bronze, shell, glass and semi-precious

stone ornaments have been recovered are Nāgārjunakoṇḍā (Distt. Guntur, Andhra Pradesh), Vaiśālī (Distt. Muzaffarpur, Bihar), Taxila (20 miles north-west of Rawalpindi), Prabhās Pāṭan (Distt. Sorath, Gujarat), Hastināpura (Distt. Meerut, Uttar Pradesh), Junapani (Distt. Nagpur, Maharashtra), Brahmagiri (Distt. Chitaldrug, Mysore), Maski (Distt. Raichur, Mysore), Arikamedu (near Pondicherry), Ahar (Distt. Udaipur, Rajasthan), Ujjain (Distt. Ujjain, Madhya Pradesh), Bahal (Distt. East Khandesh, Maharashtra), Broach (Gujarat), Chandraketugarh (Distt. 24-Parganas, West Bengal), Prakash (Distt. West Khandesh, Maharashtra), Nagal (Distt. Broach, Gujarat), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh), Nevasa (Distt. Ahmadnagar, Maharashtra), Eran (Distt. Sagar, Madhya Pradesh), Tirukkambuliyur (Distt. Tiruchirāpallī, Madras), Baroda (Gujarat), Brahmapurī (Distt. Kolhapur, Maharashtra), Kunnattur (Distt. Chingleput, Madras), Chandrāvallī (Distt. Chitaldrug, Madras), Śiśupālgarh (Orissa), Dhanora (Distt. Drug, Madhya Pradesh), Sonpur (Distt. Gayā, Bihar), Mathurā (Distt. Mathurā, Uttar Pradesh), Pāṭaliputra (Patna, Bihar), Sanur (Distt. Chingleput, Madras), Lauriyā - Nandangarh (Bihar), Kauśāmbī (Distt. Allāhābād, Uttar Pradesh), Nāsik (Maharashtra), Koṇḍāpur (Distt. South Kanara, Mysore), Tripurī, Śrāvastī (Distt. Bahraich, Uttar Pradesh), Ahichchhatrā (Distt. Bareli, Uttar Pradesh), Tamluk (Distt. Midnapore, West Bengal), Coorg (Mysore), Raigir (Hyderabad, Andhra Pradesh), Wynad (on the Malabar Coast), Sulur (Distt. Coimbatore, Madras), Porkalam (Distt. Trichur, Kerala), Kaundanpur (Distt. Amraoti,

Maharashtra) and Paravai (Distt. Madurai, Madras).[1] From the nature of wide distribution it appears that the craft was in a very flourishing condition and played an important role in the socio-economic life of the people.

During the period between fourth century A.D. and 750 A.D. jewellery and ornaments may have existed in a flourishing condition, but their specimens have been recovered only from a few archaeological sites like Vaiśālī (Distt. Muzaffarpur, Bihar), Bhiṭā (Bihar), Eran (Distt. Sagar, Madhya Pradesh), Prakash (Distt. West Khandesh, Maharashtra), Broach (Gujarat), Pallavamedu (Distt. Kāñchīpuram, Madras), Sisupālgarh (near Bhuvaneswar, Orissa), Nāgārjunakoṇḍā (Distt. Guntur, Andhra Pradesh), Ahichchhatrā (Distt. Bareli, Uttar Pradesh), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh) and Chandraketugarh (Distt. 24-Parganas, West Bengal).[2] The gold jewellery and

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1. Indian Archaeology 1954-55, pp.7, 13, 15-16 and 20, 1955-56, pp. 10 and 22, 1956-57, pp.18, 34-35, 1957-58, pp.36 and 50, 1958-59, pp.12 and 50, 1959-60, pp.9, 14, 16, 19 and 51 and 1960-61, pp. 12, 28-29, 32-34, 37 and 50; Ancient India, No.2, pp.95-100, 108, No.4, pp.72-73, 78, 80, 203 and 266-269, No.5, pp.68 and 89, No. 8, pp.12, 35, 37-44 and 48, No.9, pp.137-38, Nos.10 and 11, pp. 92 and 94, No.13, pp.106, 111-115 and No.15, p.40; Sir John Marshall, Taxila, Vol.II, 1951, pp.623-628, 630-631, 633-634, and 636; M.G. Dikshit, "Some Beads from Kondapur", Arch. Series, Hyderabad, No.16, 1952; H.C. Beck, "Beads from Urn Burials in the Wynaad, Malabar Coast", Man, XX, No.10, 1930, p.175; M.J. Walhouse, "Archaeological Notes", Indian Antiquary, IV, 1875, pp.12-13 and H.C. Beck, "Notes on Sundry Asiatic Beads", Man, Vol.XXX, No.18, 1930, p.168.

2. Indian Archaeology, 1953-54, p.12, 1954-55, p.13, 1957-58, p.9, 1958-59, pp.12 and 25, 1959-60, pp.19 and 51 and 1961-62, pp. 12, 18, 25, 38 and 40; S.K. Maity, Economic Life of Northern India in the Gupta Period, 1957, Calcutta, p.103; Arch. Survey of India, Annual Report, 1911-12, p.92, Ancient India, No.5, p.89; No.8, pp.35 and 37-44.

ornaments of this period mainly consisted of ear-rings, rings, beads and armlet; while the silver ornaments consisted of ring and amulet only. Among other jewellery and ornaments mention may be made of shell and glass bangles and beads of semi-precious tones. Shell bangles appear to have been very popular and made in profusion. Pallavamedu (Distt. Kāñchīpuram, Madras) may be said to be one of the flourishing centres of shell bangle industry of the period. Gold ornaments which were more popular in the preceding period were recovered only from two sites viz., Bhiṭā and Vaiśālī both lying in Bihar. Two gold ear-ornaments recovered from Vaiśālī deserve special mention in this connection because of the reason that the interior of these two are reported to be filled with copper with artistic designs in repoussé. Embossing on gold was probably started from this period. This is further corroborated by the find of a disc of gold embossed with a human face.[1]

From the nature of distribution it appears that during the period between 751 A.D. and 1100 A.D. the use of traditional jewellery and ornaments was perhaps limited to some extent in the country. Gold, copper, shell, glass and semi-precious stones were still being used as the basic raw materials for jewellery and ornaments, but the examples produced mainly consisted of rings, ear-rings, bangles, and beads. The notable findspots of the period from where different types of jewellery and ornaments have been recovered are Indragarh (Distt. Māndāsor, Madhya Pradesh), Hastināpura (Distt. Meerut, Uttar Pradesh), Sirpur (Distt. Raipur,

1. Arch.Survey of India, Annual Report, 1911-12, p.92.

Madhya Pradesh), Nevasa (Distt. Ahmednagar, Maharashtra), Maski (Distt. Raichur, Mysore), Kunnattur (Distt. Chingleput, Madras), Ahichchhatrā (Distt. Bareli, Uttar Pradesh) and Śrāvastī (Distt. Bahraich, Uttar Pradesh).[1] From the limited distribution it may be presumed that some economic factors or social changes may have been responsible for the decaying condition of this significant craft which had been playing an important role in the social and economic life of the people in the preceding ages.

The next two periods falling between 1101 A.D. and 1800 A.D. also represent a gloomy picture of this traditional craft. During the period between 1101 A.D. and 1500 A.D. copper-ring, shell and glass bangles and beads of semi-precious stones have been recovered only from a few archaeological sites viz. Hastinā-pura (Distt. Meerut, Uttar Pradesh), Nevasa (Distt. Ahmadnagar, Maharashtra), Maski (Distt. Raichur, Mysore) and Rājghāṭ (Distt. Vārānasī, Uttar Pradesh)[2]. During the period between 1501 A.D. and 1800 A.D. glass bangles, beads of semi-precious stones, lapidary works including making of cups, handles of knives, etc., lac bangles, enamelled jewellery and ornaments in gold and silver appear to have been very popular among the contemporary population. The important findspots of the period from where specimen of glass bangles, beads of semi-precious stones, lac bangles and enamelled

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1. Indian Archaeology, 1955-56, pp.11 and 26, 1957-58, p.38 and 1958-59, pp.22-28; Ancient India, No.8, pp.34-35 and 37-49, Nos.10 and 11, pp.91-92 and 94 and No.13, pp.16 and 106.
2. Indian Archaeology 1954-55, p.8, 1955-56, p.11 and 1957-58, p.51; Ancient India, Nos.10 and 11, pp.91, 92 and 94 and No.13, pp.16 and 106.

jewellery have been recovered or reported to be in existence are Eran (Distt. Sagar, Madhya Pradesh), Rājghāṭ (Distt. Vārānasī, Uttar Pradesh), Kaundanpur (Distt. Amraoti, Maharashtra), Maski (Distt. Raichur, Mysore), Cambay (52 miles south of Ahmadabad, Gujarat), Jaipur (Rajasthan), Chanda (Maharashtra), Lucknow (Uttar Pradesh), Delhi and Lahore (Punjab).[1] It may be noted here that the enamellors of Lahore where they came from Persia, were brought to Jaipur in the sixteenth century, and enamel was extensively employed in seventeenth and eighteenth centuries in India and elsewhere in gold and silver work. The craftsmen of the Punjab, Jaipur, Chanda and Lucknow were celebrated for this work. Delhi and Jaipur enamels reached a high stage of perfection and were unmatched in any part of the country. The ornaments were generally enamelled only at the back-the front being set with either uncut precious stones or crystal and glass in the Kundan setting.

The nineteenth century appears to be comparatively notable in the history of jewellery and ornaments. The use of pure gold or silver ornaments was still in vogue though the people began to appreciate either enamelled jewellery or stone-set jewellery which were made by setting precious or semi-precious stones. Precious

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1. Indian Archaeology - 1957-58, p.51, 1960-61, p.18 and 1961-62, p.30; Ancient India No.13, 1957, p.106; Travels in India - by Jean Baptiste Tavernier, translated from the original French edition of 1676 by V. Ball, Vol.I, 1889, p.69; A.K. Coomaraswamy, The Arts and Crafts of India and Ceylon, 1913, p.242; Jamila Brij Bhushan, Indian Jewellery, Ornaments, and Decorative Designs, p.125.

stones were set in jewellery by the wealthy classes, while the semi-precious stones were used by other classes of people of the society.

The enamelled jewellery which replaced the pure gold jewellery and ornaments of the previous periods, and became very popular among other jewellery and ornaments of the nineteenth century, was made out of the two kinds of encrusted enamels - the 'cloisonne' or filigrain enamel, and the 'Champlevi', in which the outline was formed by the place itself, while the colours were placed in depressions hollowed out of the metal to receive them and were made to adhere by fire. The most important centres of enamelled jewellery during the nineteenth century appear to have been Delhi, Kangra, Kulu, Multan, Bhawalpur, Jhang, Hazara, Jodhpur, Bikaner, Jaipur (PL.XVIII, Fig.1), Jorhat (in Assam), Indore, Ratlam, Kashmir, Benares, Lucknow, Haidrabad (in Sind), Karachi, Abbottabad, Nurpur and Kach.[1]

Among other jewellery and ornaments of the nineteenth century mention may be made of the shell, glass and lac ornaments which were generally used by the common and middle class people of the society. Shell ornaments are reported to have been manufactured at Dacca, Jaipur, Gujarat and Bombay,[2] while the glass ornaments such as bangles, rings, beads, etc. are known to have been manufactured at Delhi, Lahore, Jaipur, Indore, Mattod and Chinnapatna in Mysore.[3] Lac ornaments specially lac coated bangles were made in different parts of India specially at Ghazipur,

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1. T.N. Mukherji, Art Manufactures of India, 1888, pp.139 and 141-143.
2. T.N. Mukharji, op.cit., pp.281-282.
3. Ibid, pp.294-297.

Benares, Lucknow, Delhi and other towns in Upper India, Murshidabad in Bengal, Hajipur, Patna, and Bhagalpur in Bihar, Shivapur near Poona, Chinchni in Thana District, Kālahastrī and Venkaṭagiri in Madras, Karimganj in Assam, Rewa and Indore in Madhya Pradesh.[1] The last important item or jeweller's work in the nineteenth century was the lapidary work which consisted or various ornaments including necklaces, bracelets, beads, etc. The important centres of lapidary work in the nineteenth century are reported to have been Bhera in the Punjab, Jabalpur in Madhya Pradesh, Cambay in the Bombay Presidency, Jaipur in Rajasthan, Agra and Lucknow in Uttar Pradesh and Amritsar in the Punjab.[2] The ornaments made by the lapidary process were strictly traditional and remained unsophisticated even in the first quarter of the present century when the traditional craftsmanship was undergoing a revoluntionary change through the modern trends of westernised character.

Modern jewellery

Jewellery and ornaments[3] still play an important role in the social life of the Indians. There is no house in the country where jewellery or ornaments are not used. The peasant in a prosperous year saves a little money and turns it into gold bangles

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1. Ibid, pp.146-147.
2. Ibid, pp.268-273.
3. T.M. Abraham, Handicrafts in India, 1964, pp.107-116; R.J. Mehta, Handicrafts and Industrial Arts of India, 1960, pp.15-25; Photographic Collection of Indian Jewellery and Ornaments in the Office of the Registrar General, India, New Delhi.

or nacklaces. This capital put in the form of ornaments is kept until a necessity badly arises for the purchase of a pair of bullocks, seeds to sow or to meet the expenses for the marriage of his daughter or fight the misfortunes of a rainless year. So also the richer class hoard their wealth in the form of gems and valuable jewellery. Moreover, adornment of form being a natural instinct would continue as long as the instinct exists. The wealthy and the fashionable city dwellers wear necklaces and bangles made in gold and gems, while the poor and the hill tribes wear necklaces and bangles in beads and shells.

Different types of traditional ornaments are made in the country. We come across ornaments for the head, forehead, ears, nose, teeth, neck, upper arm, wrists, fingers, waist and the ankels, and they are common throughout the country though they may be known by different names. Of the ornaments, necklaces and bangles play an important role in Indian jewellery.

Jewellery and ornaments are found to be manufactured in different places of India, the most important of them being Khassia and Jaintia hills, Karimganj, Jorhat and Sylhet in Assam, Nalgonda, Kālahastī and Vizagapatam in Andhra Pradesh, Monghyr in Bihar, Rajkot, Paddhari and Bhuj in Gujarat, Panipat in Haryana, Kangra and Kulu in Himachal Pradesh, Srinagar in Jammu and Kashmir, Trichur in Kerala, Indore, Ujjain, Chindwara, Jagdalpur and Ratlam in Madhya Pradesh, Bombay, Ahmednagar, Savantwadi, Nāsik, Thana and Nagpur in Maharashtra, Mysore in Mysore, Cuttack in Orissa, Karnal, Rohtak, Ambala, Hoshiarpur, and Amritsar in Punjab,

Jaipur, Jodhpur, Alwar and Bikaner in Rajasthan, Tirupati, Madurai, Tanjore, Rāmanāthapuram, Coimbatore and Trichirapally in Tamil Nadu, Agartala in Tripura, Agra, Mathurā, Lucknow, Benares, Hardwar and Oudh in Uttar Pradesh and Calcutta and Murshidabad in West Bengal. Even in Delhi different kinds of ornaments sepcially gold and stone-set jewelleries are made.

It has been observed that the Moghul style of jewellery is still reflected in the works of Delhi, Agra, Mathurā, Lucknow, Benares and neighbouring places. The skilful setting of precious stones, the jewels and gems produce rich effect. Moreover, the goldsmiths of these areas show skill in stringing and arrangement of glass beads and lac bangles incrusted with spangles in stamped orside.

Karnal in Punjab produces characteristic hollow silver beads. Rohtak has peasant jewellery made remarkably well having designs grievously wanting in more pretentious work. In open work of chiselled silver bracelets, Ambala excels. Hoshiarpur has a speciality in making well finished nose rings of gold each having perfectly made flowers and rosettes. Characteristic enamelled ornaments are made in Kangra. At Panipat, peculiar kind of necklaces are made of thin silver beads.

The Kashmiri goldsmiths produce extremely beautiful bracelets, ear-rings, ear-studs, ear-drops, necklaces (PL.XVIII, Fig.2) and bangles of silver and pure gold studded with stones. The lapidaries of Srinagar possess telented skill in goldsmithy and are specially proficient as seal cutters. Ornaments studded with precious or semi-precious stones are fanciful among the Kashmiris.

In Rajasthan silver ornaments appear to be very popular among the people. The most important centres of silver jewellery in Rajasthan now-a-days are Sahapura, Soni Pakrojji, Jaipur and Jodhpur where different types of silver jewellery such as armlets, anklets, bracelets, bangles, ear-rings, ear-drops, hair-pins and necklaces are made. These ornaments are noted for their traditional designs.

In Gujarat also gold and silver jewellery and ornaments are made in a large scale and in traditional forms and designs. Among the most important centres of gold and silver jewellery in Gujarat mention may be made of Rajkot (Distt. Rajkot), Paddhari (Distt. Rajkot), Bhuj (Distt. Kutch), and Jamnagar (Distt. Jamnagar). In these centres different types of jewellery and ornaments such as bracelets, necklaces, bangles, ear-rings, ear-plugs, hair-pins, pendants, anklets, etc. are manufactured in different shapes and patterns (PL.XVIII, Figs.3 and 4 and PL.XIX, Fig.1).

In Maharashtra graceful head ornaments are made. The goldsmiths of Ahmednagar show extraordinary proficiency in making neck ornaments consisting of three rows of hollow gold balls filled with lac set in a pad of silk. The city of Bombay produces both archaic and streamlined designs in high standard. With a number of jewellery shops with modern tools, upto-date designs are brought out. In Nāsik men wear ear-rings, silver wristlet, gold necklet, and also rope of silver wire with a loop at one end, a tassel at the other. Hill tribes of Thana wear rows of blue and while beads round the neck and rings both in the lobes and rims of the

ear. They also wear bangles and bracelets in abundance.

In Madhya Pradesh bell-metal ornaments made by cire-perdue process are very popular among the Gond and Maria women of the Jagdalpur and Chhindwara regions. These ornaments mainly consist of anklets and armlets.

In Bengal carving, chasing and embossing in gold, silver, and copper are done with proficiency. The traditional skill in making ornaments for the forehead, ear-rings, nose-rings, bracelet, anklet, etc. is maintained even now. Moreover, Bengal makes brass jewellery often gilded with gold and silver, and are popular among low castes.

Ornaments in Assam are beautiful in form and design. Khassia hills produce filigreed gold bracelets and necklaces. Karimganj makes bangles and bracelets in lac.

At Agartala, Tripura silver ornaments are curious in form and design. These ornaments mainly include necklace, anklets and bracelets.

In Orissa the filigree work is very popular. The people of Cuttack have attained a surprising skill and delicacy in this work. This is generally done by boys who with accurate fingers put thin silver threads together in necessary rapidity. Bihar's jewellery is massive in appearance and conventional in finish and form. In certain cases where ear-rings are heavy, chains are crossed to support them.

In the south the forms of jewellery are primitive. Filigree work here is done to á considerable standard. Kālahastī,

Tirupathi and Rajahamundry are producing ornaments of different kinds. The religious ornaments made in these parts are extremely artistic. Madurai, Tanjore, Rāmanāthapuram and Coimbatore produce innumerable variety of ornaments in gold. Heart pattern necklace and bracelets made in Trichirapally are excellent in designs and forms, and look attractive. In Nalgonda, Andhra Pradesh silver necklaces, waist belts, anklets and forehead ornaments are made in traditional pattern. These are generally used by the Lambadi Women of the place. In Kerala the principal ornaments mainly consist of a large cylinder of gold worn in pierced and enlarged holes of the ears, rings of silver and gold, chains, necklaces and bracelets. The necklaces produced at Trichur are extremely beautiful for variety of designs locally known as Gurudamālā (PL.XIX, Fig.2) Mahālakshmīmālā, Nāgapaṭa-mālā, etc.

Enamelling work or meenākārī on gold, silver, copper and brass is done in many places of India. With intricate designs done in every detail meenākārī articles have a special charm. Jaipur in Rajasthan is famous for enamel work in gold, silver and copper. In Alwar also enamelling is done in beautiful finish. At Jorhat in Assam, gold enamelling is done beautifully in different colours like blue, green and white on lockets, ear-rings, bracelets and necklaces. In Bengal, brass jewellery is gilded with gold and silver. Delhi and Benares also specialise in gold meenākārī work. Bhawalpur, Kashmir and Lucknow have excellent enamelled pieces done in silver.

In Bengal, shell bracelets are beautifully made and worn as religious obligation. Sylhet in Assam is also famous for shell ornaments. Murshidabad, Cuttack, Amritsar, Pali and Indore specialise in making ornaments of various types in ivory, horn and wood. Monghyr in Bihar makes ornaments from ebony and areca.

From the brief survey of jewellery and ornaments in India it appears that this craft has survived in this country through the centuries. "In India, jewellery is not worn because of its intrinsic value alone; but because it is beautiful, because it serves to satisfy the aesthetic needs of the poor and the rich alike - the former by the simple ornaments of silver; the latter by the dazzling master-pieces in purest gold that the Indian craftsman is capable of turning out."[1]

The survey of the age-old traditional crafts in India goes to prove that many were the glories of Indian crafts for ages past. The cradle of an ancient civilization, India bequeathed a rich legacy in arts and crafts to the world. Excavations conducted in different parts of India prove that India in various periods had many handicrafts, some of them in high standard. If the industrial arts and crafts of India reached a state of almost near perfection, the very fact that they have survived so long all the vicissitudes to which they must have been subjected, was no doubt greatly due to the encouragement afforded by the powerful and even petty princes and rulers, and the aesthetic inclinations of the common people of different ages.

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1. R.J. Mehta, op.cit., p.25.

In India, the handicrafts have an importance all their own. They express the great traditional heritage of our country. It is obvious that in the old days beauty and utility were never divorced as in the present age. Every article turned out was the creative expression of its maker, and brought him the exaltation of fulfilment. As long as the masses of India retain their taste for superb workmanship, as long as they continue to appreciate the value of skilled craftsmanship, as long as they continue to delight in the really beautiful, so long will the arts and crafts of India survive and for ever flourish.

CHAPTER - II.

SOCIAL LIFE OF THE CRAFTSMEN

Position of the Craftsmen in Social Hierarchy - Royal Patronage and Privileges Enjoyed by the Craftsmen - Classification of the Craftsmen Class - Dignity and Position of Labour.

Pages : 103 - 124.

CHAPTER II : SOCIAL LIFE OF THE CRAFTSMEN.

It is difficult to form an idea of the social position of the craftsmen until we come to the Vedic period. During the Neolithic period the potters may have played an important role in the socio-economic life of the people, but we do not know anything about their social status. During the Harappan and Post-Harappan periods different categories of craftsmen such as the potters, the stone-cutters specially the sculptors, the weavers, the dyers, the ivory-carvers, the metalsmiths specially the goldsmiths, the engravers, the masons and shell-workers appear to have produced different types of decorative, utilitarian and cult objects, but it is not possible in the present state of our knowledge to determine their exact social position in the contemporary society. According to K.N. Dikshit[1], the remains unearthed at Mohenjodaro demonstrate the existence of different sections of people who may be grouped into four main classes, the learned class, warriors, traders and artisans and finally manual labourers, corresponding roughly to the four varnas of the Vedic period. If this view is accepted, the artisan class may have formed the third class which also included the commercial class specially the traders.

During the Vedic period the craftsmen who are supposed to have formed the third - the Vaiśya class took to various arts, crafts and industries. Of the craftsmen such as the weavers, the metalsmiths, the jewellers, the carpenters, the chariot-makers,

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1. K.N. Dikshit, Prehistoric Civilization of the Indus Valley, Madras, 1939, pp.31-32.

the potters, the sculptors, etc. special mention may here be made of the Rathakāra (who made carts and chariots) and Takṣan (the carpenter) who enjoyed a considerable social status. They stood in close relation to the king of whom they were regarded as stī or clients.[1] It may be noted here that on account of the importance of the chariots in war the Rathakāras (wheel-wrights) did perform an important occupation. From the Vājasaneyī Saṁhitā[2] and the Atharvaveda[3] we learn that the Rathakāras occupied a position of importance in society. In the Śatapatha Brāhmaṇa[4], too, the Rathakāra is regarded as a person of good standing. So also seems to have been the case with the smiths who made tools, implements and weapons of ayas (pure, dark copper)[5]. The main impetus towards the development of the smith's craft probably came from the ever-increasing requirements of the military needs of the community, settled in the midst of a hostile population. It, therefore, appears that division of labour had become a necessity, and various professional classes had arisen in society. "The artisan classes, who were regarded in later times as Śūdras and more frequently as worse than Śūdras, being mixed castes, were respectable citizens of the state in the Rigvedic society and evidently belonged to the community of Viś"[6].

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1. Rigveda X.97.23; See also Macdonell and Keith, Vedic Index, Vol.I, p.96.
2. XXX.6,7.
3. III. 5.6.
4. XIII. 4.2.17.
5. Studies in the Cultural History of India, First Edition, UNESCO, edited by Guy S.Metraux & Francis Crouzet, published by Shivlal Agrawala & Co.(P) Ltd., Agra-3, 1965, p.31.
6. N.K. Dutt, Origin and Growth of Caste in India, Vol.I (C.B.C. 2000-300), Calcutta, 1931, pp.58-59.

During the later Vedic period, the Vaiśya class (Viś) i.e. the industrial population appears to have lost the social status they onee enjoyed in the Rigvedic period. A late passage in the Aitareya Brāhmana[1] gives rather a low estimate of him with reference to the Kshatriya, when it says that "he is to be lived on by another (anyasya balikrt) and to be oppressed at will". Although things might not have been really so bad as this, there is no doubt that the position of the Vaiśya class was steadily deteriorating in this age. "Towards the end of the Vedic period, however, there came a change. The Vaiśya and the Śūdra communities, looked down upon by the higher castes, were able to improve their position by organising into guilds, which gave them protection against oppression and helped them in making their economic condition better".[2]

During the Sūtra period, however, the difference between the Vaiśyas and Śūdras was getting narrower day by day. The occupations of the two castes were practically interchangeable. The general rule was that "in times of distress each caste may follow the occupation of that next below it in rank".[3] "So the Vaiśyas, who were rigidly shut out from the occupations of the higher castes, freely descended to those of the Śūdras, viz. menial service and

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1. VII.29.3.
2. N.C. Bandyopadhyaya, Economic Life and Progress in Ancient India, Vol.I, 2nd Edition, University of Calcutta, 1945, Chap.III, p. 149.
3. Vishnu, II.15.

handicrafts, while the latter in distress were permitted to follow the professions of Vaiśya caste".[1] Moreover, the process of merging of the Vaiśya community in the Śūdra community also started in this period. The case of the Rathakāras may be cited in this connection. We have seen that the Rathakāras (chariot-makers) who evidently belonged to the Vaiśya community and were regarded as quite honourable men in society in the Rigveda, had gradually split off from the Vaiśya caste and were put as a separate caste lower than the Vaiśyas. Baudhāyana Dharma Śūtra describes them as a mixed caste, being descended from a Vaiśya male and Śūdra female.[2]

The Buddhist texts supply us with a considerable amount of information regarding the social position of the craftsmen in early Buddhist times. The most striking features of the social organisation of the craftsmen at this time are: the association of craftsmen in villages, the hereditary character of the craft, and the importance of the elder or master-craftsmen. These conditions, like so many other early Buddhist social features, have persisted in mediaeval and even until modern times in India, where we find, for example, smith's villages and potters' villages where all or nearly all the inhabitants belong to the occupational caste.

So far as the association of craftsmen in villages is concerned, we find mention of a village of craftsmen in the Sūchī Jātaka. "The Bodhisatta was borne in the kingdom of Kāsī, in a

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1. N.K. Dutt, Origin and Growth of Caste in India, Vol.I, Calcutta, 1931, p.173.
2. I.9.17.6.

smith's family, and when he grew up became skilled in the craft. His parents were poor. Not far from their village was another smith's village of a thousand houses. The principal smith of the thousand was a favourite of the king, rich, and of great substance ....."[1]. In another Jātaka, the Alīnachitta Jātaka, we read that there was: "once upon a time a village of carpenters not far from the city, in which five hundred carpenters lived"[2]. This localisation of industry may be due to the policy of segregation adopted by higher castes or the king with regard to the people following low professions (hīnasippas).

Besides the craftsmen thus organised in extra-urban communities of their own, we have on the one hand, craftsmen living in the city, in their own streets and quarters; and on the other, craftsmen of no particular caste or considered as belonging to despised castes. Thus the Veṇas and the Rathakāras were considered to be low on account of the nature of their profession. They worked on bamboos and wood, and both were considered as low. The same was the case with the basket-maker, the potter, the weaver, etc. who are described as pursuing low sippas[3]. The Jātakas also describe the basket-maker (Nalakāra)[4], the weaver (Pesakāra)[5], etc. as low professionals. Some of the members of these castes were, however,

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1. "The Jātaka", Ed.E.B. Cowell, 1895-1908, No.387.
2. Loc. cit. No.156.
3. Suttavibhaṅga (Pāchittiya II.2). See also Social and Rural Economy of Northern India by A.N. Bose, Vol.II, University of Calcutta, 1945, p.459.
4. Jātaka IV.251.
5. Ibid. I.356.

employed in royal courts. There were court potters(Rāja-kumbhakāra)[1], court basket-makers (Rājupaṭṭahāka-Nalakāra)[2], etc. Their designations suggest that they occupied a rank which raised them above the low position to which the other unfortunate members of their class belonged.

As it appears, the manufacturers and the handicraftsmen during the pre-Mauryan times were developing into different castes with the characteristics of hereditary professions and a head of their group. The potters (Kumbhakāra)[3], smiths (Kammāra)[4], ivory workers (Dantakāra)[5], carpenters (Vaddhaki)[6], etc. belonged to hereditary families and had their own settlements. Their heads were known as the Jeṭṭahakas; e.g. Mālākāra - Jeṭṭhaka[7], Vaddhaki-Jeṭṭhaka[8], Kammāra-Jeṭṭhaka[9], etc. The Sūchi Jātaka[10] tells us that there was a Jeṭṭaka at the head of the village of 1000 blacksmiths. The headman appears to have been sometimes appointed by the king as the Kharamvara Jātaka[11] shows. Though we hear of the misconduct of some of the headmen as in the Kharamvara[12] and Gṛhapati Jātakas[13], the villagers were not altogether powerless. From the Pāniya Jātaka[14], we find that the headman who prohibited the slaughter

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1. Ibid. I.121; V.290.
2. Ibid. V.291.
3. Majjhima - Nikāya II.18, 46 and III.118; Jātaka II.79 and III.376.
4. Sutta - Nipāta I.5.
5. Digha - Nikāya I.78; Majjhima Nikāya II.18; Jātaka I.320.
6. Jātaka II.18, 405, IV.344.
7. Ibid. III.405.
8. Ibid. IV.161.
9. Ibid. III.281.
10. No.387.
11. No.79.
12. No. Ibid.
13. No.199.
14. No.459.

of animals and the sale of wine in the village had ultimately to rescind his orders on account of the protest of the villagers. Even when the headman was a nominee of the king the villagers had a voice in the management of their affairs.

The Buddhist texts also show that caste was not rigidly tied to craft in Pre-Mauryan times. The distinction between caste and trade became much less clear in later times; in early Buddhist times caste was less defined and crystalised than it afterwards became, and there was no division of Śūdras so-called.[1] The view that the caste was not rigidly tied to craft in those days can be supported by evidences found in the early Buddhist literature. From the Buddhist sources it is gathered that the Brāhamaṇas in the ordinary walk of life appeared as farmers, craftsmen, businessmen, soldiers, administrators and so on.[1] The Jātakas also describe a Kshatriya prince working successively as a potter, basket-maker, reed-worker, garland-maker and cook.[2] The story says that a love-born prince apprenticed himself successively to a potter, a basket-maker, a florist and a cook and that there was no reproach for his pursuing such jobs when the matter was disclosed. Mention is also made of a Seṭṭhi (Vaiśya) who worked as a tailor and a potter[3], without loss of prestige. In the Kuśa Jātaka[4], "it is recorded that Prince Kuśa, not wishing to marry, conceived

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1. Majjhima Nikāya Sūtta, 98; Sūtta-Nipāta, III-9; Jātaka II.165, IV.207 and V.22.
2. Jātaka, V.290-93.
3. Ibid, VI.372.
4. No.531, Also quoted in "The Indian Craftsman," by A.K.Coomaraswamy, 1909, pp.26-27.

the idea of having a beautiful golden image made, and of promising to marry when a woman of equal beauty should be found. He summoned the chief smith, and giving him a quality of gold, told him to go and make the image of a woman. In the meanwhile he himself took more gold, and fashioned it into the image of a beautiful woman, and this image he had robed in linen and set in the royal chamber. When the goldsmith brought his image, the prince found fault with it, and sent him to fetch the image placed in the royal chamber. At first mistaking this image for a daughter of the gods, he feared to touch it; but being sent to fetch it a second time, he brought it; it was placed in a car and sent to the queen Mother with the message, 'when I find a woman like this, I will take her to wife."

This story is no doubt legendary, but show at least that at the time of its composition the practise of a craft was not considered derogatory to the honour of a prince. In the Chullavagga[1] even the monks are allowed the use of a loom and of shuttles, strings, tickets and all the apparatus belonging to a loom.

From the instances cited above it is evident that in early Buddhist times not only the royal princes, but also the Brāhmaṇas and the monks used to appreciate and practise arts and crafts. They worked as craftsmen without any loss of prestige. This shows that the role of the craftsmen was considered to be very important in the then society.

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1. V.28.

Now the question arises, who were the craftsmen in the early Buddhist society? As it appears, they were certainly not Brāhmaṇas or Kshatriyas. It is also doubtful that they were Vaiśyas, because we do not find any mention of the Vaiśyas practising handicrafts as their profession. It is, therefore, probable that the craftsmen class consisted of certain groups of people other than the Brāhmaṇas, Kashatriyas and the Vaiśyas. It has already been noted that there were lesser castes (hinajāti) and lesser trades (hina śippa) in the early Buddhist society, and some of the craftsmen were considered to be low on account of the nature of their profession. A.K. Coomaraswamy, however, observes "that it was not handicraft itself that gave a low social rank to certain groups of craftsmen, but rather the fact that these groups consisted essentially of aboriginal non-Aryan races practising crafts that were known to them before the arrival of the Aryans (weaving, pottery, basket-making)"[1]. Coomaraswamy's statement reveals the fact that there were certain groups of craftsmen in the early Buddhist society who consisted of aboriginal non-Aryan races, and it is very likely that they had a low social status equal to that of the Śūdras of later times.

During the Maurya period the craftsmen appear to have received special care and royal patronage from the contemporary rulers. In the time of Chandragupta there were six Municipal Boards in Pāṭaliputra, of which the first was entrusted with the superintendence of every thing relating to the industrial arts.[2]

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1. A.K. Coomaraswamy, op.cit. pp.51-52.
2. V. Smith, Early History of India, Edition II, p.125.

In the reign of Aśoka (275-231 B.C.), "Artisans were regarded as being in a special manner devoted to the royal service, and capital punishment was inflicted on any person who impaired the efficiency of a craftsman by causing the loss of a hand or an eye ..... Ship-builders and armour-makers were salaried public servants, and were not permitted it is said, to work for any private person. The wood-cutters, carpenters, blacksmiths and miners were subject to special supervision"[1]. From the facts noted above it is evident that the craftsmen not only played an important role in the royal service, but also in the socio-economic life of the people. Whatever may be the social position of the craftsmen during the Maurya period, it is certain that the Rathakāras (wheel-wrights) were treated as Śūdras. Kauṭilya observes, "Members, of this (Rathakāra) caste shall marry among themselves. Both in customs and avocations they shall follow their ancestors. They may either become Śūdras or embrace any other lower caste excepting the Chaṇḍāla"[2]. In the Jātakas, as we have already seen, they occupy a position even lower than that of the Śūdras. "In later times when they had been finally merged in the rank of the Śūdras some of their former privileges were given to the Śūdras in general".[3]

During the age of the Epics the profession of the craftsmen was also considered to be an honoured one. An interesting fact is that the Brāhmaṇa teachers gave instruction not only in all academic subjects, but also in non-academic ones like archery, the

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1. Ibid. p.120.
2. Arthaśāstra, III.7.
3. N.K. Dutt, Origin and Growth of Caste in India, Vol.I, 1931, Calcutta, p.172.

science of war in general, and other arts and crafts.[1] In the Rāmāyaṇa[2], where we are told that in the procession of citizens who accompanied Bharata in his quest of Rāma figured merchants, jewellers, potters, carpenters, goldsmiths, etc. This shows that the Rāmāyaṇa recognised the position held by the craftsmen in the society.

The epigraphic and the literary sources of the Śuṅga-Kushāṇa period also supply us with interesting information regarding the social life of the craftsmen. One inscription from Mathurā[3] records dedication by the daughter-in-law of an iron-monger (lohavaṇiya), herself the daughter of a jeweller (maṇikāra). This is not an evidence of inter-caste marriage, but of one in the same caste between members following different professions and of varying status. In the Lalitavistara[4], there is reference to the consideration of virtues in a prospective bride, but the same work also points to the custom of giving daughter in marriage to one proficient in arts and crafts.[5] Similar reference is also found in the Mahāvastu[6] which refers to a blacksmith's son producing a very fine needle before claiming the hand of another man's daughter of the same caste. The custom of inter-caste marriage was also prevalent during this period. One of the inscriptions[7] records that a jeweller gave his daughter in marriage to a blacksmith's son.

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1. Mahābhārata, XII.327, 49.
2. Rāmāyaṇa, 83rd. sarga.
3. Epigraphia Indica, Vol.I, p.383, No.4.
4. XII. P.139.19.
5. Ibid. XII, p.143.4ff.
6. Vol.II, p.83.
7. Epigraphia Indica, Vol.I, p.381, No.1.

The Milindapañha, on the other hand, refers to low professions as well as despised class among the craftsmen. The wood-cutters[1] (tacchakas), the bamboo-workers[2] (Veṇa), etc. were supposed to be men of low despised class, while the low professions includdd those of dyers[3] (rajakas), weavers[4] (tantivāpas or pesakāras), etc. From the Milindapañha it is, therefore, gathered that the professions of the wood-cutters, the bamboo-workers and the weavers were still considered to be low as we have noticed in the early Buddhist period. So far as the social position of the craftsmen is concerned, Manu states that Śūdras unable to live by personal service to practise handicrafts[5] and in addition, trade.[6] The Mārkaṇḍeya Purāṇa[7] also holds almost the same view about the craftsmen. It states that Śūdras normally to live by practising as artisans, rearing cattle and carrying on trade. From the instances cited above it is evident that the profession of practising handicrafts was mainly confined to the Śūdras though they used to carry on some trades side by side as subsidiary occupations.

During the Gupta period the blacksmiths, the goldsmiths and the carpenters appear to have enjoyed higher social status among other craftsmen. The blacksmiths not only supplied tools to cultivators, gardeners, carpenters, wood-cutters and house-holds, but also armed the military.[8] It was on them that the king

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1. Milindapañha, p.413.
2. Ibid. p.331.
3. Ibid.
4. Ibid.
5. Manu, X.99-100.
6. Yājñavalkya-Smṛiti, I.120.
7. English translation by F.E. Pargiter, Calcutta, 1904, XXVIII. 7-8.
8. Amarakosha, 2.35, p.267.

depended for victory in war. The goldsmiths on the other hand mainly satisfied the demand of the rich section of the society and most of them settled in the rich localities and towns, where their manufactures were appreciated and bought[1]. In the Mudrārākshasa[2] we are told that Vishṇudāsa was a prominent jeweller in the city of Kusumapura. This undoubtedly indicates that though there were other petty jewellers in that city, the prominent jeweller always enjoyed a higher social status. As regards the carpenters the Amarakosha[3] refers to the head of carpenters. This shows that the carpenters were organised in a professional caste group headed by a master craftsman. It may also be noted here that this sort of union or co-operative association was most probably necessary to safeguard their rights and previleges. The importance of the carpenters is also recognised by the Mudrārākshasa[4] where it is mentioned that Chāṇakya mobilizes all the carpenters of Pāṭaliputra to prepare the palace and the city gates for the entry of Chandragupta during the time of his coronation.

During the Post-Gupta period also the craftsmen appear to have held a significant social position in the then society. It is mentioned in the Harshacharita of Bāṇabhaṭṭa[5] that on the occasion of Rājyaśrī's marriage skilled artisans were invited from all quarters. Leather-workers lustily beat their drums, being

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1. Ibid. 10.32. p.232 and 10.8. p.227.
2. Act. VI, p.184.
3. 2.35, p.267, 3.3, 61, pp.270,284, 10.9, p.227 and 34,35,p.233.
4. II, p.56.
5. IV, p.142.

intoxicated with wine given free to them. The carpenters measured the marriage altar, and received presents of flowers, unguents and clothes. The goldsmiths incessantly shaped and hammered gold. The painters drew the auspicious pictures and clay workers made clay figures of fish, tortoises, crocodiles, coconuts, plantains, betelnuts, etc. From Bāṇa's description it may be presumed that the position of the skilled craftsmen such as the leather-workers, the carpenters, the goldsmiths, the painters and the potters was recognised and honoured. This supposition may further be supported by the fact that Bāṇa, though a member of an orthodox family, had among his other companions, a goldsmith, a diamond-cutter, a painter, a modeller, and a potter.[1]

That the profession of the craftsmen was considered to be an honoured one during the Post-Gupta period is also pointed out by Yuan Chwong[2] who says that there were five standard sciences of which the second one was that of skilled professions. In the Indian terminology the science of skilled professions can be named as śilpasthāna. The inclusion of śilpasthāna in the list of standard sciences shows that there was a good scope also for the professional and useful education in the early Indian system of education. The Kāvya Mīmāṁsā of Rājaśekhara[3] also includes śilpaśāstra as one of the principal vidyās.

During the period between eleventh and twelfth centuries A.D. the social position of many of the handicraftsmen appears to

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1. Harshacharita, I, pp.41-42.
2. Watters I.p.155.
3. p.4.

have been low because of the existence of numerous mixed castes in the then society. Kalhana[1] mentions as many as sixty-four castes among which numerous were the mixed castes. The Brahmavaivarta Purāṇa[2] also states that it is useless and impossible to count the number of those who belong to the mixed castes. The Bṛihaddharma Purāṇa[3] mentions three grades of the mixed castes. The first one comprised as many as twenty uttamaśaṅkaras, the second one of twelve madhyamaśaṅkaras and the third one of nine adhmaśaṅkaras or antyajas. The antyajas were beyond the four orders or varṇas, while other mixed castes were regarded as śūdras.

As it appears, most of the craftsmen were Śūdras. For example, mention may here be made of the Śaṁkhika, Kāṁsyakāra and the Suvarṇakāra who according to the Brahmavaivarta and the Bṛihaddharma Purāṇas were all Śūdras. The Bṛihaddharma Purāṇa[4] classifies the goldsmiths as madhyamaśaṅkara being born of Ambaṣṭha father and Vaiśya mother. The Kāṁsyakāra and the Śaṅkhikas or workers in brass and shells, were not always poor. The former is mentioned in the Bhāṭerā copper plate of Govindakeśava and the latter in the Somnāth temple inscription, as donors of houses.[5] This shows that the economic and social position of some of the brass and shell-workers were comparatively high, while others being poor and having a low social status were always degraded in the society.

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1. Rājataraṅgiṇī, translated by M.A. Stein, VIII, 2407.
2. Edited, Jivananda Vidyasagar, I.10.122.
3. Uttarākāṇḍa, Ch.XIII.33-48, XIV.33-65.
4. Ibid. Ch.XIII, 33-34, 40.
5. Epigraphia Indica, XIX, p.277ff and XXIII, 141.

The fact that the social position of the craftsmen was very low in the eleventh and twelfth centuries A.D. is also corroborated by the evidence supplied by the contemporary literary sources. Aparārka (commentary on Yājñavalkya Smṛiti)[1] quotes the Brahma Purāṇa to show that the food which comes from the hands of a goldsmith, a blacksmith, a carpenter, a potter and a worker in bamboo is forbidden. Lakshmīdhara[2] also approves the rules of Yājñavalkya, Devala and Angira, who prescribe that a Brāhmaṇa cannot take the meals offered by carpenters, blacksmiths, weavers, garland-makers and painters.

It has already been noted that most of the craftsmen were Śūdras. Apart from them there were some craftsmen who were known as Antyajas whose position was below the Śūdras. That the Antyajas were beyond the four orders or varṇas is also observed by Ālberuṇī. According to Ālberuṇī[3], after the Śūdras, followed the people called Antyajas, who rendered various kinds of services. They were not reckoned amongst any caste, but only as members of a certain craft or profession. As for example, mention may here be made of the shoe-makers, the basket-makers, the shell-makers and the weavers who lived near the villages and towns of the four castes, but outside them. It appears that though the Antyaja class of craftsmen developed a caste hierarchy, their position has always been pitiable and they have been regarded as untouchables in the society. The position of the weavers seems to have

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1. pp.1177-79.
2. Niyaka Kāla-kāṇḍa, Vol.III, Gackwad's Oriental Series, Baroda, No.CXI, 1950, pp.262-63.
3. Ālberuṇī's India, translated by E.C. Sachau, I, p.101.

been improved in the Sena times. According to the findings of Sukumar Sen[1] and Niharranjan Ray[2], Dhoyī, who belonged to the community of weavers, rose to the position of a Court-poet of king Lakṣmanasena.

It is interesting to point out here that during the eleventh and twelfth centuries there was probably no difference between the Vaiśyas and the Śūdras. Though the Vaiśyas continued to be counted as a seperate caste in the digests up to the end of the seventeenth century, a tendency manifested itself very clearly to degrade them to the Śūdra community. The approximation of the Vaiśyas to the Śūdras began as early as Manu [3] and Baudhāyana Dharma Sūtra.[4] Ālberuṇī also did not find any difference between the Vaiśyas and the Śūdras. If men belonging to either of these castes recited the Vedas, their tongues were cut off by the ruler.[5] He categorically states : "Between the latter two classes there is no very great distance. Much, however, as these classes differ from each other, they live together in the same town and villages, mix together in the same houses and lodgings"[6]. On the basis of Ālberuṇī's statement and other supporting evidences Altekar [7] and Ghurye[8] have rightly pointed out that the Vaiśyas were levelled

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1. Prāchīn Bāṅglā O Bāṅgālī, Viśvavidyā Saṁgraha Series of Viśvabhāratī, No.12, p.19.
2. Bāṅgālīr Itihāsa, p.319.
3. III.112.
4. I.11.4.
5. Sachau II.136.
6. Ibid, I.101.
7. Rāshṭrakūṭas and Their Times, Poona, 1934, pp.332-33.
8. Caste and Class in India, New York, 1950, pp.57, 64, 88 and 96.

down to the position of the Śūdras. From the evidences noted above it, therefore, appears that some of the craftsmen may have belonged to the Vaiśya community, but their position always remained equal to that of the Śūdras.

The social status of the craftsmen remains unchanged even in the present century. Most of the artisan castes nowa-days are generally recognised as clean Śūdras, while some of them are treated as unclean or degraded untouchables in the social hierarchy[1]. The manufacturing castes that are actually regarded as more or less clean are the following :

(1) Tāntī - weaver.

(2) Kulāla - potter.

(3) Karmakāra - ironsmith.

(4) Svarṇakāra - goldsmith.

(5) Sūtradhar - carpenter, Sutār or Bārhī.

(6) Kaserā and Thatherā - braziers and coppersmiths.

Of the artisan castes noted above a few, however, belong to the group called Nava Sāyakas, while others, though not included in the list of Nava Sāyakas, are regarded as clean Śūdras. But it may be noted in this context that the social position of many of the artisan class is not the same in other parts of the country. As for example, it may be stated that the weavers of Bihar have not the same social position in the Hindu caste system that the

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1. The study of the social position of the craftsmen in the nineteenth-twentieth century has been made mainly on the basis of information collected from, "Hindu Castes and Sects" by J.N. Bhattacharya, Calcutta, First Edition, 1896, Reprinted, 1968, pp.179-215.

weavers have in Bengal. In Bihar, the weavers are in the habit of eating flesh and drinking strong liquors, and so they are regarded as an unclean caste. The Tāntis of Bengal are Śūdras of the Nava Sāyaka or upper nine group. The Kori and Koli of Northern India are weavers possessing the Hindu faith; but they are very low castes, and a member of any of the higher castes will not take even a drink of water from their hands. The Tāntis of Orissa are regarded as an unclean caste, while the weavers of Madhya Pradesh are reported to be a semi-clean caste. There is a class of Kashettris in Gujarat whose profession is weaving. They are regarded as good Hindus. But there is not in Gujrat any caste that can be said to correspond the Tāntis of Bengal. The cotton weavers of Southern India are called Kaikālār. They are addicted to drinking spirits and their habits are similar to those of the aboriginal tribes. There is one class among them called Sāliyār, who take the sacred thread. The silk weavers of Southern India are called Patnulkār. Ethnologically they are a superior race, and their caste status is also higher than that of the Kaikālārs. The weavers of Andhra Pradesh are called Niyata Kām. The castes who practise weaving are Pattaśāli, Devaṅgala and Sāliyār. These are clean castes.

The Kumār or Potter:

The caste is found in every part of India, and in most parts of the country they are regarded as a clean caste. In Gujarat they are regarded as exceptionally clean, but in Madhya Pradesh and Orissa they are regarded as unclean.

The Karmakāras and Lohārs.

The Hindu ironsmith is called Karmakār in Bengal, and Lohār in other states of Northern India including Bihar. The Kāmārs of Bengal are included among the upper nine of the Śūdra castes. In Bihar, the corresponding caste of Lohār has the same position and there also a Brāhman will take drinking water from the hands of an ironsmith. It is only the Lohārs of Madhya Pradesh who are regarded as an unclean caste. That is, however, not on account of their profession, but due to their practice of eating fowls.

The goldsmiths:

The position of the goldsmiths in the Hindu caste system is not the same in all the states of India. In Northern India they are regarded as somewhat unclean. But it is suggested that they come within the division called Karmakār, and the best Brāhmaṇs will not sometimes hesitate to take a drink of water from their hands. The position of the Sonār in Bihar and Punjab is similar to that of the Shakrā or swarnkār of Bengal. In the Punjab, the Sonārs take the sacred thread. In the extreme South the goldsmiths do not form a separate caste, but are included in the group called Kamallār whose sub-sections practise five different kinds of handicrafts, viz., work (1) in gold and silver, (2) brass and copper, (3) iron, (4) carpentry, (5) sculpture. The goldsmiths in Mysore are called Akkasāla or Agasāla. They are recognised as the head of the clan. In Madhya Pradesh there are two classes of goldsmiths called Sonār and Panchallār. They take the sacred thread at the time of marriage, and are regarded as clean castes.

The Sūtār and the Bārhī:

In Bengal, the carpenters are called Sūtradhar or Sūtār. Though their profession is a clean one, they, like the Sonārs, are regarded as a semi-clean caste. Good Brāhmaṇs do not usually take drinking water from their hands. In Madhya Pradesh and N.W. Provinces, the carpenters are known as Bārhīs. Their social position is somewhat higher than the Sūtārs of Bengal. Good Brāhmaṇas will take drinking water from their hands. In Western India the Sūtārs are regarded as a clean caste.

The braziers and coppersmiths:

The Kānsa Baniks or Kānsārīs of Bengal are both manufacturers and sellers of brass, copper and bronze vessels. In other provinces of Northern India, the corresponding castes are called Kasērā, Thatherā and Tamherā. The status of the Kānsa Baniks is exactly similar to that of the Gandha Baniks. The ordinary Śūdra Yājaka Brāhmaṇas minister to both as priests, and even the best Brāhmaṇas do not hesitate to take drinking water from their hands. The Kasērās and Thatherās of Northern India have, almost, the same characteristics and the social status as the Kānsārīs of Bengal. It may be noted in this context that the caste position of the Kānsa Baniks is also the same as that of the Śankha Baniks (popularly known as Śānkhārīs) of Bengal whose main occupation is the manufacture of shell bracelets and bangles.

Apart from the principal artisan castes noted above mention may here be made of the leather workers (Chāmārs or Muchīs), the mat-makers and the basket-makers who are not only very unclean, but

also regarded as untouchables in the Hindu caste system. In Bengal and Uttar Pradesh, the basket-makers and mat-weavers are generally Doms. They are grouped among the unclean untouchables as almost the lowest amongest castes. Baines remarks about the Doms: "Here, then, is found a caste which, if not at the bottom of the social scale, is, at least, not far from it".[1] The low social status of these craftsmen is due more to their non-Aryan blood and their non-observance of the Śāstric restrictions regarding diet and drink, than to the nature of their professions.

The above survey of the social position of the craftsmen in different ages would show that the manufacturing castes have always been regarded as Śūdras in the traditional four-fold social division arising out of the adoption of different occupations by different sections of the community. During the Rig-vedic period, the Vaiśya class may have taken to various arts, crafts and industries, but from the later Vedic period onwards the industrial arts and crafts appear to have been practised chiefly by the artisan castes who have been looked upon as the Śūdra class. The study of the social position of the craftsmen also reveals the fact that the profession of the artisans may have been considered as an honoured one in different ages, but their social status has almost remained unchanged in the traditional caste hierarchy of the Hindu society.

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1. Baines Athelstone, Ethnography : Castes and Tribes, 1912, p.84.

C H A P T E R - III.

ECONOMIC LIFE OF THE CRAFTSMEN.

(1) Guild Organisation and Co-operative Societies, (2) Apprenticeship, (3) Localisation of Crafts, (4) Mobility of Occupation, (5) Wages and (6) Marketing.

Pages : 125 - 180.

CHAPTER - III : ECONOMIC LIFE OF THE CRAFTSMEN:

It is difficult to throw any light on the economic life of the craftsmen until we come to the Vedic period. During the Palaeolithic Age the people were ignorant of any craft and even of pottery. In the next stage of human advance, i.e. during the Neolithic period the people understood the use of some crafts such as pottery, but in the present state of our knowledge it is not possible to make a pronouncement about the economic status of the craftsmen. During the Chalcolithic period the craftsmen such as the potters, the stone-cutters, the weavers, the dyers, the ivory-carvers, the metal-smiths specially the goldsmiths, the engravers, the massons and the shell-workers appear to have played an important role in the socio-economic life of the people, but it is difficult to determine their exact economic status in the contemporary society. This much we can presume that the craftsmen were economically well off and their products were used by all classes of people both for decorative and utilitrian purposes. Another discovery at Harappa, a prolific Chalocolithic site, is the artisans' quarters, "which comprise fourteen small houses built in two blocks separated by a long narrow lane."[1] This probably indicates that the artisan class used to live in a particular portion of the city and there was localisation of industries and occupations. It may also be presumed that the craftsmen with the same industrial and economic pursuits may have congregated in the specified street or quarters and formed a more developed organisation.

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1. The Vedic Age, edited by R.C. Majumdar, Vol.I, 1965, p.173.

By the Vedic period the society had crossed the primitive stage of economic life. The ever-increasing wants of the society gave rise to various arts and crafts. Rural industries were in the process of further development, and crafts had a tendency of being multiplied and sub-divided. There was also a decided tendency towards division of labour and the growth of various sub-crafts. The progress of Indian arts and crafts depended in no small degree on the organisational genius of the people.

1. Guild Organisation.

With the growth of the crafts the organisation of the craftsmen into guilds probably came into existance. The words Vrātas and Gaṇas are generally supposed to mean guilds or corporate unions in later sanskrit. In the Ṛigveda[1] the army of the Māruts is said to be divided into Gaṇas and Vrātas, the two words always meaning guilds or corporate unions in later sanskrit. Again, in the same book[2] in connection with dice-play, we hear of leaders of Gaṇas and Vrātas. In the White Yajurveda[3] we have the word Gaṇa, besides Gaṇapati which means the head-man of a Gaṇa. The evidence of these words goes to prove the existence of these organisations in the early part of the Vedic period. In addition we have certain passages in the Brāhmaṇas which contain the word Śreṣṭhin[4] meaning a modern Seth (banker) or, more probably, the headman of a guild. We also come across such word as Śreṇī in the

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1. V. 53.11.
2. X. 34.
3. XXIII. 19.1.
4. Aitareya Brāhmaṇa, III. 30.3; Kauśitaki Brāhmaṇa, XXVIII. 6.

Vedic literature[1] which most probably signifies an Association. While interpreting a technical term for functionaries of a Śreṇī, the renowned Commentator, Shankarāchārya observes, "The merchants and craftsmen always function in groups; they can create wealth only when they are grouped, not individually."[2] The supposition that there existed guild organisation in the early Vedic period, has, however, been keenly disputed by some scholars, but the word Śreṣṭhin used in Vedic texts would appear from its context to mean 'headman of a guild'.

The craft guilds may have been existed in the Post-Vedic period, but we do not have sufficient information about their functions and organisational set up. During the Pre-Maurya, Maurya, Śuṅga, Kushāṇa and Gupta periods (i.e. between circa 600 B.C. and 550 A.D.) the craft guilds came to play a prominent part in the various aspects of socio-economic life. As to the rise of guilds which are closely associated with the growth of industry, we find their earliest mention in the Sūtras of Pāṇinī.[3] There, we find four words, e.g. Gaṇa, Pūga, Vrāta and Saṅgha. In early Pāli literature too, we find the words Saṅgha, Pūga, Seṇī and Gaṇa.[4] Of these four words, two, viz. Gaṇa and Saṅgha were probably used to denote any corporation, e.g., unions for political or other purposes, while the other two words viz. Pūga and Śreṇī (seṇī) were generally used to denote corporations

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1. Atharvaveda, 1.9.3 and 10.6.31; Chāndogya Upanishad, 5.2.6; Kauśitaki Upanishad, 4.20, 2.6 and 4.15.20.
2. Bṛhadāraṇyaka Upanishad, 1.4.12.
3. V. 3.
4. Bhikkhunipātimokkha, ch.2.

of merchants, artisans, work-people or other unions whose main object was to gain wealth by trade or industry.[1] The Commentators on Manu[2] and Nārada[3] explain the word Śreṇī as an assembly of persons following a common craft, but in the Arthaśāstra, Śreṇī is either a guild of workmen[4] or a military clan[5] or communities like those of Kāmbojas, Surāṣtras and Kṣatriyas who subsist by agriculture, trade and military service. The Pūga is a craft or trade guild according to the Commentators of Nārada[6] and Yājñavalkya.[7] But both Virāmitrodaya and Mitākṣarā distinguish it from the Śreṇī as an association of persons of different castes and occupations, while Śreṇī is a mere limited assembly of people of same craft or occupation though possibly of different castes.[8]

The Jātakas[9] refer to the conventional number of eighteen guilds, but it is to be noted that only four of them viz. those of wood-workers, smiths, leather-dressers and painters are specially mentioned ("Vaddhaki-Kammāra-Chammakāra-Chittakāra-dināṇāsippa-kusalā"). The number eighteen is a traditional one, and it can be said that there were various śilpas, all probably organised into

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1. N.C. Bandyopadhyaya, Economic Life and Progress in Ancient India, Vol.I, Hindu period, Second edition, University of Calcutta, 1945, p.248.
2. VIII.41.
3. I. 7.
4. II. 4.
5. VII. 16.
6. X. 2.
7. II. 31.
8. Quoted in Social and Rural Economy of Northern India (cir. 600 B.C.-200 A.D.) by A. Bose, Vol.I, Calcutta, 1961, Book II, Chapter V, p.282.
9. Mūkapaṅgu Jātaka, No.538, Mahāunmārga Jātaka, No.546, Samudravāṇij Jātaka, No.466, Sūchī Jātaka, No.387 and Kuśa Jātaka, No.531.

guilds. The list of guilds given in the Mahāvastu[1] is different from that of the traditional number eighteen given in the Jātakas. A few guilds are also mentioned in the inscriptions of Western India of the Andhra-Kshatrapa period.[2] An inscription of the Kushāṇa period[3] mentions only two, one of which the Samitākāra is also included in the Mahāvastu list. It is, therefore, presumed that the other ones might have been in existence as well. Among craft guilds Vṛhaspati[4] enumerates those of goldsmiths, silversmiths, workers in other base metals (kupya), carpenters, stone-dressers (saṁskṛtā) and leather-workers. The Junnār Buddhist Cave Inscriptions also speak of one of bamboo-workers (Vasakāra), another of braziers (Kasakāra) and a third of corn-dealers.[5] We come across a guild of architects in the Raghuvaṁśa.[6] Reference to guild of jewellers is also made in the Mudrārākshasa of Viśākhadatta.[7] Speaking about agriculture, trade and different vacations, Varāhamihira on a number of occasions forecasts the prosperity and adversity of guilds in his Bṛihatsaṁhitā.[8] There are some epigraphic references to guilds and corporations. We

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1. III. p.442. 8ff.
2. Luder's list, Nos.1133, 1137, 1162, 1165 and 1180.
3. Epigraphia Indica, XXI, p.55 ff.
4. XIV. 27.
5. Buhler and Burgess : Epigraphia Indica, IV.10, 24, 27.
6. Raghuvaṁśa, ed.H.D. Velankar, Bombay, 1948, XVI-38.
7. Ed. R.D. Karmakar, Poona, 1940, I, pp.18-20, 28.
8. Ed. Sudhakara Dvivedi, 2 Vols. Banaras, 1895, IV. 13, X.13, XXXII.18 and XXXIV. 19-20.

have specific references to oil-men and silk-weavers.[1] These craft-guilds had three characteristics : (i) an alderman at the head, (ii) heredity of profession and (iii) localisation of industry. The position of the alderman of the guild is indicated in the Sūchī Jātaka[2] where he is a great favourite of the king (rājavallabha) and in the Uraga Jātaka[3] where he is an important minister of the king (of Kośala). These heads of guilds were called Pamukkha (chief or president) and also Jeṭṭaka (elder, alderman), distinction between these two words being not apparent. There is also instance of all the guilds having a common chief who was also lord of the treasury of the kingdom of Kāśi.[4]

The functions of these guilds were legislative, judicial and executive. From the Viṇaya Piṭaka[5] we learn that guilds had the function of arbitrators to settle differences between members and their wives. They also exercised considerable control over the members[6] and probably the settlement of disputes among its members and the solution of the problems of trade and business fell under their jurisdiction. Gautama[7] lays down that they have legislative functions, for, he refers to the validity of the laws and customs established by guilds of artisans and craftsmen. Vaśiṣṭha[8] speaking of the validity of Jātidharma probably refers to the

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1. J.F. Fleet, ed. Corpus Inscriptionum Indicarum, III, London, 1888, pp.68 and 79.
2. No.387.
3. No.154.
4. Nyagrodha Jātaka, No.445.
5. IV. 226.
6. Jātaka I. 267 and IV. 411.
7. XI. 20, 21.
8. XIX.7.

customs of these guilds. It is probable that in the days of Vaśiṣṭha, the guilds were corporate bodies whose existence and whose customs and privileges were recognised by the kings of those days. According to Rhys Davids, disputes between one guild and another (seṇi-bhaṇḍana)[1] were in the jurisdiction of the Mahāseṭṭhi or the Lord High Treasurer who acted as a sort of chief Alderman over the guilds.[2]

For the distribution of profits and liabilities, investments and dividends among the members of the guilds certain rules were formulated. According to the Arthaśāstra[3], guilds of workmen (saṁghabhṛtaḥ) and those who carry on co-operative work (sambhūya samutthātāraḥ) shall divide their earnings (vetanaṁ) either equally or as agreed upon among themselves. The rules of Nārada and Bṛhaspati on Joint transaction of business are more elaborate and relate to trade guilds as well as to craft guilds. The partners must share all legitimate expenses of business such as those incurred by (a) purchase and sale of merchandise, (b) provision for necessary travelling, (c) wages of labourers, (d) realisation of dues (e) freight, and (f) care of treasures.[4] The loss, expenses and profit of business are to be shared by each partner according to the share contributed by him to the joint stock. A partner is responsible for any loss due to his want of care or any action without the assent or against the instructions of

1. Uraga Jātaka, No.154.
2. Rhys Davids, Buddhist India, p.97.
3. III.14.
4. Nārada, III.4.

his co-partners.[1] On the other hand he is entitled to a special remuneration for special profit gained through his individual action.[2] The master craftsman is entitled to a double share of profits.[3]

The finances of the guild consisted of individual earnings and contributions, fines and confiscations on delinquent members, king's subsidy[4] and profits from execution of orders.[5] Good profits accrued from the investment of the deposits which the guilds received from the king and the public as banks. When Kauṭilya [6] speaks of Upanidhi (deposits) of the guilds, he shows that guilds functioned as banks. Kauṭilya also prescribes that those who can be expected to relieve misery, who can give instructions to artisans, who can be trusted with deposits, who can plan artistic work after their own design, and who can be relied upon by guilds of artisans may receive the deposits of guilds. The guilds shall receive their deposits back in time of distress.[7] From the contemporary records it is also known that the guilds not only received deposits of public money, but also paid regular interest on them. An inscription of Nāsik at the time of Nahapāṇa (dated A.D. 119-24)[8] informs us that Usavadāta, the son-in-law of the Śaka Satrap Nahapāṇa, deposited permanently 3,000 Kārshāpaṇas

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1. Ibid. III.5; Bṛhaspati, XIV, 9.
2. Nārada, III.6; Bṛhaspati, XIV.10.
3. Bṛhaspati XIV.29.
4. Ibid. XVII, 24.
5. Yājñavalkya II, 190.
6. IV. 1.
7. Ibid.
8. D.C. Sircar, Select Inscriptions, Vol.I, Calcutta, 1942, p.157, See also Epigraphia Indica, VIII, p.82, No.12.

with two weavers' guilds, 2,000 were given to one weavers' guild at the rate of one percent per month, and 1,000 to another weavers' guild at ¾ per cent per month. This shows that the rate of interest varied between 12 and 9 percent per annum. A Mathurā record[1] of the year 23 records two deposits of 550 Purāṇas with two guilds of (Samitākāra and probably Dhaniñika) with the condition that out of the interest that accrued from month to month (māsānumāsam) a hundred Brahmins were to be fed in the alms-house, and some provision was to be left for the indigent and the poor. It is not certain if the guilds charged some remuneration for the services rendered, or it was a free service to encourage pious and religious deeds. The incomes were, perhaps, distributed as (a) dividend among members, (b) charity and (c) fresh investment.[2] This is corroborated by the fact that four Banaras weavers plied their trade jointly and used to divide their earnings in five shares, keeping four for their own and depositing of the fifth for charity.[3]

During the Gupta period the guild banks had such a reputation in the eyes of the people that even the kings did not hesitate to deposit money with them. Chandragupta II permanently deposited 20 dīnāras in two instalments with a corporate body, and out of their interest endowed two alms-houses.[4] His son and successor Kumāragupta I[5] on one occasion deposited 13 dīnāras and on another

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1. Epigraphia Indica, XXI, p.55 ff.
2. Bṛhaspati, XVII.23 f.
3. Jātaka IV, 475.
4. J.F. Fleet(ed.), Corpus Inscriptionum Indicarum, III, London, 1888, p.38, L.7 and 16.
5. Ibid, p.40, L.6-7 and p.41, L.7.

occasion 12 dīnāras apparently with one or two guilds and from this interest two almshouses were to be perpetually maintained. This clearly shows that from the banking functions of the guilds the people could take full advantage in making permanent religious endourments. We have also seen that the deposits with the guilds were made under proper deeds of agreement stating the conditions under which they were held.

The guilds while enjoying an autonomous life stood in close relation to the civil authority. The king not only respected the guild laws, but also used to see that members followed their own laws.[1] The legal masters enjoin that with a view to enforcing observance of these laws and compacts among members the king may resort to the penal sanctions of fine and banishment.[2] In the case of a dispute between a guild and its head, the king shall arbitrate and he shall restrain when a whole guild boycotts a member from hatred.[3] He subsidises a guild when necessary. He has the prerogative of taking it to his pleasure. On occasions like disputes among the guilds it was probably the state interference which settled them. It thus appears that if the judgement of the guild officials was not in conformity with the guild laws and usages, the king had the right to annul their decision. Nārada also ordains that the king should prevent a combination of different guilds, probably of a hostile nature. He should also prevent them from embarking on anti-state or immoral or criminal actions.[4]

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1. Yājñavalkya, I, 361; Nārada X.2.
2. Manu, VIII, 219-21; Yājñavalkya, II.192.
3. Bṛhaspati, XVII, 19-20.
4. Nārada X.4-7.

We are told in Jātaka of a king inaugurating the office of the Bhāṇḍāgārika, who carried with it "the judgeship over all guilds" (sabbaseṇīnām vicaraṇatthāya)[1] and "whose function possibly referred to a supervision of the goods made or dealt with by a guild or guilds and not only to king's exchequer".[2]

Inspite of state - interference the guilds appear to have been allowed perfect freedom of immigration as dictated by economic necessities. The Māndāsor inscription[3] records that a guild of silk-weavers migrated in a body from Lāṭa near lower Narmadā region, to the inland country of Māndāsor. Some of the members of the guild had changed their vocation of weaving and had taken various professions from soldering to astrology. Still they did not lose their internal cohesion and corporate spirit and they were still known as silk-weavers' guild.

The administrative machinery which helped the guilds to deal with these activities, is also clearly outlined by Nārada and Bṛihaspati. There was a chief or President assisted by two, three or five executive officers. Only those who were honest, acquainted with the Vedas and their duty, able, self-controlled, sprung from good families and skilled in every business, should be appointed as heads of an association. But hostile, dissolute, baseful, indolent, timid, avaricious, or very young persons must not be chosen for these affairs.[4]

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1. IV.43.
2. Rhys Davids, Cambridge History of India, Vol.I, p.207.
3. J.F. Fleet (edited), Corpus Inscriptionum Indicarum, III, London, 1888, p.79.
4. Bṛihaspatismṛiti: Ed. A.V. Rangaswami, Baroda, 1941, XVII. 8-10.

The executives seen to have exercised considerable authority over their members. Thus, on a man who fell out with his corporation, or neglected his work a fine is ordanied amounting to six nishkas to four suvarnas. Banishment from the town is also laid down as the punishment for one who injures the common stock or breaks the mutual agreement.[1] Apparently these guilds enforced their own laws, though in different situations they might have to take the help of the state.

As a result of survey of the corporate activities of the Gupta period it appears that the guild organisations not only performed important economic functions such as carrying out joint contracts and receiving money deposits, but also performed judicial and executive functions in relation to their members. The increasingly autonomous character of the guilds, as virtually independent units of production and political power, can be inferred from the rules which govern the relation between the guilds and the state. While the earlier texts enjoin the king to pay respect to the customs (Śreṇidharma) of the guilds[2], those of the Gupta period instruct the king to enforce the usages prevalent in the guilds.[3] Bṛihaspati lays down that whatever is done by the heads of guilds towards other people must be approved by the king.[4] Thus it seems that the guilds were free to act in whatever way they liked, and

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1. Ibid. XVII.14, 15.
2. Gautama XI.21-22; Manu, VII.41 and 46.
3. Yājñavalkya, II.192, cf.I.361; Nārada X.2.
4. XVII.18.

the king was bound to accept their decision.[1] It has already been noted that on certain occasions the king could interfere in the affairs of the guilds. Nārada[2] ordains that the king should prevent a combination of different guilds, probably of a hostile nature. He should also prevent them from embarking on anti-state or immoral or criminal actions. But these regulations clearly show that during the Gupta period the guilds were considered capable of threatening the authority of the State. Probably some of the guilds dominated the economic life of the towns such as Vaiśālī and Māndāsor, and thus functioned as independent units of production.[3]

The word nigama appearing on the coins and terra-cotta seals seems to throw further light upon the guild organisation in the early periods falling between third or fourth century B.C. and sixth century A.D. Marshall discovered a seal-die of terra-cotta at Bhiṭā near Allāhābād with the legend 'Śāhijitiye nigamaśa' assigned to the third or fourth century B.C.[4] Four sealings bearing the legend 'nigama' or 'nigamaśa' in Kushāṇa characters have also been found there and a fifth with legend 'nigamaśya' in northern Gupta characters. Four coins have been discovered at Taxila bearing the legend 'negamā' in the reverse. The

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1. R.C. Majumdar, Corporate Life in Ancient India, Calcutta, 1918, p.62.
2. X.4-7.
3. R.S. Sharma: Economic Life and Organisation in Ancient India (Gupta period) in "Studies in the Cultural History of India", edited by Guy S. Metraux & Francois Crouzet, UNESCO, Shivalal Agarwala & Co. Ltd., Agra, 1965, p.57.
4. Annual Report of the Archaeological Survey, 1911-12, p.47.

characters are Brāhmī and Brāhmī - Kharoṣṭhī pointing to not later than the third century B.C.[1] The word also finds mention in the clay seals of the Gupta period discovered at Basārh (ancient Vaiśālī) along with other words such as Śreṣṭhī, Sārthavāha, Kulika, etc.[2] It may be noted here that the Visuddhimagga says that some naigamas and gāmas could issue money.[3]

Many scholars understand 'nigama' of the seals and coins to be guilds and not corporations. Block interprets the term as corporation or guild.[4] Following him R.K. Mukherjee[5] and R.N. Saletore[6] also hold almost the same view. D.R. Bhandarkar[7], A.N. Bose[8] and S.K. Maity[9] on the other hand suggest that the word 'nigama' should be taken in its ordinary sense, viz. "a township". This suggestion is perhaps justified in view of the reason that the word is employed in literature in that sense i.e. "a small town; market town (opposite to Janapada).[10]

In the early mediaeval period the guilds which played an important role in the industrial organisation of the early centuries

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1. Cunningham, Coins of Ancient India, p.69 and Pl.III.
2. Annual Report of the Archaeological Survey, 1903-4, p.104.
3. D.R. Bhandarkar, Carmichael Lectures, 1918, p.176.
4. Annual Report of the Archaeological Survey, 1903-4, p.104.
5. The Gupta Empire, Bombay, 1947, p.154.
6. Life in the Gupta Age, Bombay, 1943, p.367.
7. Carmichael Lectures, Calcutta University, 1918, p.170.
8. Social and Rural Economy of Northern India (cir. 600 B.C. - 200 A.D.), Calcutta, 1961, Vol.I, Chapter II, Book II, p.231.
9. Economic Life of Northern India in the Gupta Period (cir. A.D. 300-550), Calcutta, 1957, Chapter VIII, p.157.
10. Pāli Text Society, Pāli - English Dictionary, p.190.

of the Christian era, were no longer very effective. The bonds which united the craftsmen of any particular industry appear to have slackened. The guilds would seem in general not to be in a position to wield effective control over their members. This becomes clear from Medhātithi[1] who distinguishes between Śreṇī and Gaṇa and observes that though the members of the former follow the same profession they can act singly also whereas the Gaṇas always act collectively.

We are not sure what led to this change in the position of the guilds. The instability and chaos resulting from feudal wars which did not encourage craftsmen to form lasting groups may have been one of the important reasons for this. According to Lallanji Gopal[2], "The growth of feudalism with its emphasis on a rural and self-sufficient economy can also be expected to have had an adverse impact upon the fortunes of the guilds". It also appears from Medhātithi[3] that there was a tendency in this period for the members of the guilds to refer their disputes to the king. The guilds did not like this because, as Medhātithi says, it gave the king's officers an opportunity to interfere in their affairs. It

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1. On Manu VIII.2. Medhatithi Commenting on Manu (VIII.41) states that Śreṇīs are formed by artisans, tradesmen, money-lenders and so forth. Vijñāneśvara in explaining Yājñavalka (II.30) specifically mentions the Śreṇi of weavers, shoe-makers, etc. Devannabhaṭṭa also defines Śreṇīs as guilds of craftsmen like weavers (Smṛitichandrikā of Devannabhaṭṭa, edited by J.R. Gharpure, Bombay, 1918, II, p.223).

2. The Economic Life of Northern India (C.AD. 700-1200), Motilal Banarsidass, Vārānasī, 1965, p.82.

3. Op.cit.

would follow from Medhātithi that the hold of the guilds over their members was becoming loose and they were perhaps not in a position to carry out their decisions against the members.

During the early mediaeval period the guilds appear to have become mostly fossilised into occupational sub-castes. Economic co-operation, which in the earlier periods had brought the guilds money, power and prestige, was in most cases negligible. This is clearly recognised by some texts of the period which clearly explain Śreṇis in terms of caste. The Mitākṣarā[1] explains Śreṇī as a group of people of different castes who subsist by the occupation of one caste like the weavers, shoe-makers, etc. The Smṛtichandrikā[2] and the Vīramitrodaya[3] clearly explain Śreṇī as meaning the eighteen low castes. The transformation of guilds into sub-castes appears to have gone much ahead even by the time of Bhaṭṭotpala[4] who explains them as the corporation of may people belonging to the same caste. The Vaijayantī[5] also takes Śreṇī as the term for a body of people belonging to the same caste and profession. In the Kāṇhaḍadeprabandhu[6] we have a reference to eighteen varṇas, besides the four high castes, which establishes clearly the transformation of guilds into sub-castes.

In the Abhidhānachintāmaṇī[7] Śreṇī and Prakṛti appear as

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1. On Yājñavalkyasmṛti, II.30.
2. III (Vyavahārakāṇḍa), Part I, p.40, ed. L. Srinivasacharya, 6 vols., Mysore, 1914-21.
3. Vyavahāra, p.12, ed. J. Vidyasagar, Calcutta, 1875.
4. Commentary on Bṛhatsaṁhitā, ed. S. Dwivedi, Banaras, 1895, 1897, XXXIV.19.
5. P.237, I.179, ed. G. Oppert, Madras, 1893.
6. I.238.
7. III, V.714.

synonymous terms. The epigraphic records[1] of the period also refer to eighteen Prakṛtis which apparently correspond to eighteen Śreṇīs of the Buddhist and the Jaina texts. From the evidence supplied by the Kathākośaprakaraṇa[2] it appears that the guilds (Śreṇīs or Prakṛtis) were assigned a low social status. The text mentions the members of Śreṇīs such as the goldsmith, potter, blacksmith and other craftsmen and artisans (śilpa-karma-kara-samudaya) as forming the adhama (degraded) class of the society. It was perhaps the association with the low castes and groups that brought down the guilds to a low rung of the social ladder. This is further corroborated by the Jambūdvīpaprajñapti[3], which divides the eighteen guilds into two groups, viz. the Nāruā (Nārukāḥ) being touchables and the Kāruā (Kārukāḥ) untouchables. From the facts noted above it may, however, be presumed that the social position of the guilds was not only brought down in social ranking, but also there had already appeared a corresponding decline in their economic position.

The socio-economic position of the guilds may have deteriorated in the early mediaeval period, but it appears that by this period the importance of the chiefs of the guilds within the organisation had increased. The heads of important guilds commanded great authority and respect. The Deopārā inscription

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1. Epigraphia Indica, II. p.220; Proceedings of the Asiatic Society of Bengal, 1877, p.73; J. Ph. Vogel, Antiquities of the Chamba States, Calcutta, 1911, pp.162 (L.11), 166 (L.10) and 193 (L.15).
2. Introduction, p.116 ff. ed. Jina Vijaya Muni, Bombay, 1949.
3. 43, p.193.

states that Śūlapāṇi who was the head of the artisans of Vārendra (Vārendra-śilpi-gosṭhī-chudāmaṇi)received from the king the title of Rāṇaka.[1] Lallanji Gopal[2], however, doubts if there was one such guild for all the artisans in Vārendra. In his opinion, the use of the term Chudāmaṇi (crest-jewel) probably indicates that it was only a stylistic way of expressing the artistic excellence of Śūlapāṇi. The term gosṭhī, in his opinion, also does not stand in the technical sense of a guild or corporate body, but refers to assemblage or collection. Whatever may be the interpretations of the terms gosṭhī and Chūḍāmaṇi, there is no denying the fact that the chiefs of the guilds of this period had accentuated importance in the then society. This is, however, corroborated by the Smṛtichandrikā of Devaṇṇabhaṭṭa[3] which discusses in detail the situation when the Samūhas (i.e. guilds) find themselves incapable of stopping the insolence of their Mukhyas (chiefs). In such cases the king was required to interfere and to set the chief on the proper path. If the mukhya was still recalcitrant he was to be fined on a graduated scale according to the extent of his solvency, sometimes even suffering the confiscation of all his property, and in extreme cases he was to be banished from the kingdom by the king, who alone was competent to inflict such punishment. The text, however, adds that if the Samūha is at all competent to do so, it alone shall exercise this authority to punish the chief.

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1. N.G. Majumdar, Inscriptions of Bengal, Vol.III, p.49. See also Epigraphia Indica, Vol.I. 307ff. V.36.
2. The Economic Life of Northern India (C. A.D.700-1200), Vārāṇasī, 1965, p.85.
3. Ed. L. Srinivasacharya, 6 Vols., Mysore, 1914-21, III, p.53ff.

We find mention of a number of guilds in the contemporary texts. The number eighteen for the guilds is found in the Triṣaṣṭi - śalākāpurusacharita of Hemachandra[1], but for specific names we have to rely on the Jambūdvīpaprajñapti.[2] The text mentions guilds of Kumbhāras (potters), Pattaillas (weavers), Suvannakāras (goldsmiths), Sūvakāras (cooks), Gandhavvas (musicians), Kāsavaggas (barbers), Mālākaras (garland-makers), Kacchakāras (rope-makers), Tambolios (betel-sellers), Chammayarus (leather-workers), Jantapilagas (oil-pressers), Chimpayas (cloth-printers), Kaṁsakāras (braziers), Sīvagas (tailors), Guāras (? gopāla, cow-herds), Bhillas (aborigines inhabiting forests) and Dhīvaras (fishermen). Al-Bīrūnī[3] also mentions eight classes of people who formed guilds, but it is to be noted that he does not refer to guilds of craftsmen. He confines himself to those who are generally regarded as the antyajas. The legal works of the period mention some names in discussing guilds. Thus Medhātithi[4] mentions artisans, tradesmen, etc. The Mitākṣarā[5] refers to weavers, shoe-makers and betel-sellers. The Smṛtichandrikā of Devaṇṇabhaṭṭa[6] mentions only weavers. From the list of names available from the contemporary texts it is apparent that most of the occupations of the craftsmen were organised into guilds in the early mediaeval period.

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1. Tr. H.M. Johnson, 4 Vols., Baroda, 1931, 1937, 1949, 1954, I.258; III.316. See also Padmānandamahākāvya of Abhayāchandra Sūri, edited H.R. Kapadia, Baroda, 1932, XVI.193.
2. Devchand Lal-bhai Jaina, Pustakoddhara Series, Nos.52, 54, Bombay, 1920, 43, p.193.
3. I.101.
4. On Manu, VIII.41.
5. Commentary by Vijñāneśvara on Yājñavalkyasmṛti, Tr. J.R. Charpure, Bombay.
6. Ed. J.R. Gharpure, Bombay 1918, II.p.223.

During the late mediaeval period there were two types of guilds, the craft-guild and the merchant-guild. The former was a professional association based on the caste system. Each group of workmen following a particular profession and belonging to a community formed a guild. Thus, heredity formed a notable part in it; an artisan's son was usually an artisan. But if a member of a community should exchange his profession and take to the profession of some other community then he became a member of the guild. Thus, as Sir George Birdwood[1] remarks, "the trade guilds of the great polytechnical sites of India are not, however, always exactly coincident with the sectarian or technical caste of a particular class of artisans. Sometimes the same trade is pursued by men of different castes, and its guild generally includes every member of the trade it represents without strict reference to caste". Thus though caste was a great factor in the formation of guilds the sameness of occupation of the members was of equal importance.

Among the important craft-guilds of the period mention may be made of the goldsmiths, blacksmiths, brass-smiths, carpenters, idol-makers, weavers, potters, cloth-dyers and a few others.[2] But so far as their organisation is concerned we do not have sufficient information. About the guilds of Ahmadabad it has been said, "The decisions of the guilds are enforced by fines. If the offender refuses to pay, and all members of the guild belong to one caste,

1. Industrial Arts of India, 1880, p.138. See also A.K.Coomaraswamy, The Indian Craftsman, London, 1909, p.67 and K.R.R. Sastri, South Indian Guilds, pp.6-32.
2. Epigraphia Indica, Vol.XX, p.90.

the offender is put out of caste. If the guild contains men of different castes, the guild uses its influence with other guilds to prevent the recusant member from getting work"[1]. They acted as a body with the government and secured rights and privileges for their community. Likewise they also acted jointly in making collections of dues from their members and utilised the same for making gift to temples or public institutions.[2] It thus, appears that the craft-guilds may not have been very effective in the early mediaeval period, but in the late mediaeval period specially during the latter part of the eighteenth century the guilds were considered to be a powerful element in social stability.

The guild organisation in its traditional form is no longer existing in India. The interests of the craftsmen are now being looked after by the co-operative society formed, owned and operated by the craftsmen themselves. The co-operative societies are local bodies of the craftsmen which look after and promote their mutual interests. The co-operative societies generally undertake the following activities.[3]

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1. Imperial Gazetteer, V, p.101. See also A. Appadorai, Economic Conditions in Southern India, I, p.378 and A.K. Coomaraswamy, The Indian Craftsman, London, 1909, pp.12-13.

2. Epigraphia Carnatica by Lewis Rice, Vol.IV, ch.119.

3. Based on the informations collected in connection with the craft studies undertaken by the Social Studies Division, Office of the Registrar General, India, New Delhi. See also B.K. Roy Burman (ed.), Census of India 1961, Vol.I, Monograph No.3, Part VII-A(III), Textile Dyeing and Hand-printing in Madhya Pradesh, pp.88-90; Baldevraj (ed.) Census of India, 1961, Vol. XIX, Part VII(i), Brass and Copper Artwares of Delhi, pp.177-178; B.K. Roy Burman (ed.), Census of India, 1961, Vol.I, Part VII-A, Monograph No.4, Cire-perdué Casting in Swamimalai, pp.36-37.

(i) Giving technical guidance to the craftsmen.

The society gives technical guidance to the local craftsmen when they receive orders for processing articles from the society. The craftsmen get instructions from the society regarding the specifications of the designs, etc. but this cannot be considered to be technical guidance in the real sense of the term. Hardly any craftsman comes to the society for receiving guidance about new technique of operation.

(ii) Providing tools and equipments and workshop facilities to the craftsmen.

The society provides tools and equipments and workshop facilities to the craftsmen. These facilities are utilised by the craftsmen only when they get orders from the society. Generally the society does not give on hire, tools and equipments to the craftsmen. So far as the workshop facilities are concerned, the society sometimes allows the needy craftsmen to use its workshop.

(iii) Giving assistance by way of finance and raw materials to the members.

Sometimes the society gives assistance by way of finance and raw materials to its members. It is to be noted that some members are given both raw materials and cash, and some are given cash only or raw materials only. Small advances are made only to enable the craftsmen to meet the incidental expenses.

(iv) Introducing the craftsmen to the new designs and decorative motifs supplied by the State Industries Department.

The society introduces the craftsmen to the new designs and decorative motifs supplied by the state Industries Department.

Sometimes the State Industries Department specifically asks the society to introduce some new designs and motifs and the craftsmen are instructed by the society to adopt these designs and motifs.

(v) Providing marketing facilities to the craftsmen.

The society not only procures works for its members, but also provides marketing facilities for their finished products. The articles are either disposed of by it through the emporia of the State Industries Department or through its own shop. Sometimes the society disposes of the products either through commission agents or through wholesale dealers who supply orders of the shops of the organised markets in the cities and towns.

It has already been stated that the age-old guild organisations in their traditional forms are no longer existing in India. The role of the guild organisations is now more or less played by the Co-operative societies which exclusively look after the interests of the artisan communities.

2. Apprenticeship.

The occupations in ancient India were mostly hereditary. A family having struck to same craft, the father could hand down to his son his capital, credit and experience. But occupation was not always regidly determined by heredity or caste. An energetic young man could thus undergo a course of apprenticeship under a master in an art which he chose to pursue in future. Rules of apprenticeship were consequently developed.

From the Jātakas we know something about the apprentices (Antevāsika). The Antevāsika was affiliated to the master who was

the Ācharya. During the period of training, the Antevāsika had to reside in his master's house and to perform all the duties entrusted to him. He received his food and clothing in lieu of services rendered by him. His role was not always that of a learner, for sometimes he surpassed his master in skill.[1] The Kuśa Jātaka[2] tells us of an Ikṣāku prince, who became an apprentice successively to a potter, garland - maker and a cook of the Madra King in order to get an opportunity of coming in communication with Princess Prabhāvatī. The Kuśa Jātaka also refers to the practice of rewarding of apprentices, and we hear of their getting 1000 Kahāpaṇas.[3] We have also instances of fees being paid by apprentices to teachers.[4] But the conditions of pupilage, though not given in the Buddhist books are roughly fore-shadowed by Gautama[5], who says: "The apprentice may foresake his master either of his own motion (in which case he is liable to correction) or under instructions from his kinsmen who consented to his pupilage. In the later case the deserted master can sue the pupil's guardians for a breach of contract."[6] But a contract cannot be one-sided. Hence Kātyāyana who flourished in the third century B.C. fixed a penalty upon the teacher for employing the apprentice in other work. "He who does not instruct the pupil in the art and causes him to perform other work shall incur the first amercement and the pupil may forsake him and go to another teacher."[7]

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1. Jātaka V. 290 ff.
2. No.531.
3. Ibid.
4. Suśima Jātaka, No.163; Tilamuṭṭhi, No.252.
5. II.43-44.
6. Colebrooke's Digest of Hindu Law, Vol.II,p.8.
7. Ibid. p.7.

Our Smṛti writers also lay down certain rules for apprenticeship in different crafts. A glimpse of industrial education is given by Nārada[1], who explains the rules relating to apprenticeship and admission to an industrial school. If a young man desires to be initiated into the art of his own craft, he must first secure the consent of his guardian before he is apprenticed. He is to live with his master, the duration of his apprenticeship, having been fixed. The master shall teach him at his own house and feed him. He must not employ him in other works which have no connection with his chosen craft. Moreover, he should treat and instruct him as his son.[2] But if one forsakes a master whose character is exceptionally good, he may be forced to remain at the master's house; and he also deserves corporal punishment and confinement. Though his course of instruction be completed, an apprentice must continue to reside at the house of his master till the fixed period has expired. The profit of whatever work he may be doing belongs to his master. It is also laid down that when he has learnt the art of his craft within the stipulated period, the apprentice must reward his master as best as he can. Afterwards, either he may accept service under terms settled or return home after having taken permission from his master.[3] But Bṛihaspati is very precise in that respect. He states that crafts consisting of work in gold, base metal and the like are termed human knowledge; he who studies them should do work in his teacher's house.[4]

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1. Nāradasmṛti, V.16-21.
2. Ibid, 16, 17.
3. Nāradasmṛti, V.18-20; Raghuvaṁśa, V, 21-21; Yājñavalkya Smṛti, II. 187; Gautama Dharma Sutra, II. 46-47.
4. Bṛihaspati Smṛti, XV. 7.

The aforesaid rules bring out certain important features. There was probably a system of bond for a fixed period between the apprentice and the teacher. The teacher, as it appears, used to treat the trainee as his own son. He was supposed to teach him whole - heartedly and honestly. He was not free to employ him in some other work which had no concern with the trainee. Equally the trainee had some obligations to his teacher. If he attained proficiency in the craft before the expiry of the stipulated period, he was not free to leave his teacher. He had to serve his teacher quite faithfully during the rest of the period. The fruit of his labour would thus be a good reward for his teacher. Thus the essence of the whole system of technical education is that the apprentice was actually educated in the workshop of his master.

The tradition of apprenticeship continued in the later period also. We have already come to know from earlier Smrtis that an enthusiastic young man learned his craft or trade from a master whom he served as an apprentice. It appears from the Kṛtyakalpataru[1] (of Lakshmīdhara Vyavahārakāṇḍa) that this form of carrying down the knowledge of the craft was still alive in the early mediaeval period. The text, however, aimed at making the rules of apprenticeship more humane. Thus it tried to curb the power of the master to punish the apprentice. It explains the power of the master to order the Vadha of the apprentice if the latter is wicked as meaning only beating him with a bamboo-stick and adds that it merely empowers the master to inflict some corporeal punishment.

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1. Ed.K.V.R. Aiyangar, Baroda, 1953, p.384.

The traditional way of learning the hereditary occupation from the parents by observation, practice and trial and error method is still prevalent in most of the artisan families in India.[1] The young artisans learn the techniques of the craft from their family members as home-apprentice. In most of the craftsman families tricks of the trade generally pass from father to sons, and then on to grandsons, and so on. The son is trained at the hands of the father right from his childhood. Formal training is, therefore, absent. It takes quite a long time to learn all the techniques of the craft. The young artisans have no outside Guru (preceptor) to intiate them in the operations of the craft. During apprenticeship, they sometimes go to other craftsmen who may be relatives or friends of the family and may be living in a far off village. There they spend a few months and learn a great deal from them. In such cases no fee is charged for the training imparted to them.

Though the age-old system of apprenticeship is not rigidly followed now-a-days, the instances of learning crafts under a master craftsman are not rare. During the training period the apprentice generally contributes by bringing food rations from home. In some cases, the master even provides him with food and clothing. In return, the trainee helps his master in all respects, be it in the household, in the fields or in the workshop. He has

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1. Based on the data collected in connection with the craft studies undertaken by the Social Studies Division, Office of the Registrar General, India, New Delhi. See also: R.C. Pal Singh(ed.), Census of India 1961, Himachal Pradesh, Rural Craft Survey, "Gold and Silver Ornaments", 1967, pp.11-12 and S. Sinha (ed.) Census of India 1961, West Bengal and Sikkim, "Stone wares", Vol.XVI, Part VII-A(iii), 1967, p.36.

to be sincere, humble, keen and painstaking. Only then, he would be able to learn the art in the real sense from his master.[1] Sometimes the apprentices receive fixed monthly stipends from the master craftsmen. The training-cum-production centres which impart training to the apprentices also pay fixed monthly stipends. In such cases the apprentices either get employment opportunities in the workshops of their masters or start their own business after the training is over.

Besides the traditional training at home or under a master craftsman by observation, practice, and trial and error method, the training-cum-production centres of the State or Central Governments also provide training facilities to those who are interested to learn specific crafts.[2] The basic idea underlying the opening of these centres lies in the fact that though the children of the craftsmen learn the crafts from their parents or master craftsmen, it is not always possible for them to have real command over the techniques of the crafts, as the process of their learning does not always seem to be a methodical one. If the training is imparted methodically, the young craftsmen would gain more insight into the different aspects of the crafts and their techniques. This would enable them to see the techniques in new relationship and adopt innovations more readily.

During the training period the trainees are given a fixed stipend per month and also the facilities to use the tools and equipments of the centre. According to rules, the trainees are

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1. R.C. Pal Singh (ed.), Census of India, 1961, op.cit. pp.11-12.
2. Based on personal observations. See also B.K. Roy Burman (ed.), Census of India 1961, Vol.I, Part VII-A(iii), op.cit. pp.98-99.

expected to attend the classes regularly. If anybody remains absent for a long time, his stipend is proportionately cut. After the completion of the training, the State Government generally gives grant through the co-operative societies to the trainees to enable them to start their own business. They are also given preference in the matter of employment under the Government.

3. Localisation of Crafts.

Localisation is an important factor for the progress of crafts. It gives impetus to specialisation and efficiency of labour and craftsmanship. In ancient times the necessity for independence among people following a particular profession or craft led them to live together in a particular locality. The craftsmen supplied their craft goods to the consumers in the neighbouring towns and villages, and executed the orders from such consumers jointly or severally.[1] The crafts were sometimes localised in particular cities also. Such localisation was the result of their natural growth, availability of raw material and marketing facilities.

As regards localisation of crafts in a particular locality we have frequent references in the ancient Indian texts. There are references to villages of smiths[2], carpenters[3], potters, etc. which were generally in the vicinity of towns, probably forming their suburbs. It thus appears that the economic factor of specialisation of labour was responsible for the localisation of

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1. Bṛihaspatismriti, XVII. 11.
2. Jātaka, III. 281.
3. Jātaka, III.18, 405 and IV.159, 207.

various crafts and industries at separate villages and for the grouping of people of the same profession and caste.

There were apparently two types of villages in ancient India, i.e. the agricultural villages and those inhabited by craftsmen or the industrial ones. In the beginning all the villages were of the agricultural type. In course of time, owing to the progress of industries and the growth of their population, the craftsmen felt the necessity of migrating to their own settlements where they could live in large numbers and persue their crafts. A Buddhist Jātaka[1] speaks of a village of carpenters outside the city, while the Jaina Uvāsagadasāo[2] tells us of a village of 500 potters outside the city of Palāsapura. It is likely that the industrial villages lying in the vicinity of cities supplied the needs of the urban propulation. In the Jātakas[3] we come across expressions like Dvāragāmavāsī Vaddhaki, Dvāragāmavāsī Kumbhakāra, etc. Dvāragāma probably means a village outside the city, and the person living in this village probably refers to an inhabitant of such village.

More references to industrial villages are also available in the early Indian texts. A carpenter's village with 500 or 1000 familites is often seen in the frontier of the state of Kāśī or in the outskirts of the city of Benaras.[4] There was a weavers' village near Benaras under a headman[5], and a smith's village of

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1. IV. 207.
2. VII. 184.
3. Jātaka, IV.344 and III.376.
4. Jātaka, I.247, IV.159, II.18, 405 and IV.207.
5. Dhammapāla's Commentary on Therigāthā, PSS.157 ff.

1,000 houses is referred to.[1] Similar references there are to villages of basket-makers (Nalakāra)[2]. This isolation of crafts and professions and their concentration in fixed areas according to A.N. Bose[3], "gave birth to the medley castes and sub-castes which, formerly a more or less priestly hypothesis, now began to harden into rigid social partitions on the basis of occupations tightened with the bonds of heredity, endogamy and exogamy, rules of the table, etc. The corporate unity, conbined with localisation of industry, tended towards a narrowness and exclusivism whose dour consequences we are suffering for generations and centuries from the past." The localisation of crafts was also due to the policy of segregation adopted by the higher castes or the king with regard to the people following the hīnasippas[4], and partly to the nearness of the market for their labour or product of their labour as the case may be.

As in the countryside people with the same industrial pursuit flocked in particular villages, in the towns they congregated in a specified street or quarter and formed a more developed organisation. For example, in the towns of the Madhyadeśa we come across the ivory-workers' street[5] (danta-Kāravīthiṁ in Banaras), the washerman's street (rajakavīthiṁ)[6], and the weavers' quarter.[7]

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1. Jātaka, III. 281.
2. Majjhimanikāya, II.206.
3. Social and Rural Economy of Northern India (600 B.C. - 200 A.D.), Vol.I, Calcutta, 1961 (2nd revised edition), Chap.IV, Book I, p.86.
4. Jātaka I. 356 and IV.251. See also A.N. Bose, op.cit. Vol.II, Calcutta, 1945, p.459.
5. Jātaka, I. 320 f and II.197.
6. Jātaka, IV. 82.
7. Jātaka, I.356; Dhammapada - Atthakathā, I.424.

As constituents of urban life, particular crafts, arts and industries had been, by planning, localised in particular parts of the planned city. The Arthaśāstra[1] ordains that artisans manufacturing worsted threads, cotton threads, bamboo mats and the Śūdras were to settle to the west inside the city; smiths and workers in precious stones and Brāhmaṇas in the north. The Agnipurāṇa[2], however, allocates south-west corner of the town for the goldsmiths. According to the Mayamata[3], the weavers should settle to the south and wheel-wrights to the north. Crafts of pottery, brass and bronze were to occupy the outermost sites of the city. In a different order of planning artisans were placed in the outer-most zone of the city; potters and other craftsmen to the east or north; architects to the sout-east or north-west.[4]

Localisation of crafts and industries appears to be a continuous process in the rural and urban economy of India. Even during the mediaeval period the rural and urban crafts appear to have been flourished in particular villages or towns. The chief causes for this localisation were the ancestral skill of the craftsmen, availability of raw material, marketing facilities and state patronage. As for example, mention may here be made of the choppas, bandanas and corahs of Murshidabad, Maldah and other Bengal towns which were greatly in demand for export. The fine flowered brocade work was made at places like Benares, Ahmedabad

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1. II. 4.
2. Cited, A.N. Bose, op.cit., Vol.II (1945), pp.284-285.
3. Chs. 10, 11, 154-83.
4. Ibid. Chs. 9, 29.

and the fabrics in double - weaving of colours were produced in Poona, Yeola and other places.[1]

Āin-ī-Ākbarī also makes a reference to localisation of industries. Gujarat was famous for kumbhakas and silk cloth, Orissa for silk, Lahore for silk thread, and Tattah for jāmāwārs in cottou and silk. Allāhābād and the Deccan were also manufacturers of silk cloth of high class.[2] The silk industry was also the monopoly of Bengal. Says Sir Jadunath Sarkar : "A great deal of the output was woven locally, but enormous quantities were exported to Gujarat. - - - - At Surat they manufactured carpets of silk or silk and gold and silver thread. At Ahmedabad all kinds of silk stuffs were woven - - - - Banares was famous in the seventeenth century for the silk stuffs and silk embroidery as it is to-day."[3]

The chief centres of woolen industry were Kashmir, Kabul, Agra, Lahore, Patna and Rājputānā. Besides pashmīnā cloth, Kashmir was also famous for shawls of high quality[4], ivory work and wood work[5].

It has already been seen that in ancient India some of the arts and crafts were localised in particular villages, and in the towns or cities they were localised in a specified street or

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1. S.S. Kulshreshtha, The Development of Trade and Indusry under the Mughals (1526-1707 A.D.), 1964, pp.189-190.
2. Āin-ī-Ākbari, Blockmann, Vol.I, p.11.
3. Studies in Aurangzeb's Reign, p.279.
4. Khulasat: Per Mss. Khulasat-ut-Tawarikh by M. Sujan Rai Khatri, Saraswati Bhandar, Udaipur, p.49b.
5. Pinkerton Vol.VIII, Alexander Hamilton 1688-1723, p.309.

locality. It will be interesting to note that almost similar type of localisation is still found to be existing in a good number of villages, towns or cities in the country. Industrial villages such as smiths' villages, weavers' villages and potters' villages, where all the inhabitants belong to one occupational caste may not be found now-a-days, but villages predominated by craftsmen community are not very rare. As for example, mention may here be made of a village named Harhariā Chak[1] (about 2⁶ Km. from Berhampur, Distt. Murshidabad, West Bengal) where majority of the population are engaged in silk weaving. There is a village named Pātharkāṭi near Gayā town, Bihar which is mainly inhabited by the Gauḍ Brāhmaṇas practising stone-carving.[2] The very name of the village 'Pātharkāṭi' suggests that the village may have derived its nomenclature from the name of the craft being practised there. There is another village named Irbā[3] (about 17 Km. from Ranchi town, Bihar) which is mainly populated by the Muslim weavers. There is also a village Kākarmuthā (near the city of Vārāṇasī, Uttar Pradesh) which is predominated by the dyers and silk-weavers.[4]

So far as the localisation of crafts in a particular street or locality of a town or city is concerned it may be noted that there are still many towns or cities in India where localisation

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1. Information received from Dr.N.D. Bhattacharya who submitted his Ph.D. thesis on the "Settlement Pattern in the District of Murshidabad" in the Benaras Hindu University in 1965.
2. Information received from Dr. S. Prasad who has made a comprehensive survey of the village on behalf of the Social Studies Division, Office of the Registrar General, India, Ministry of Home Affairs, New Delhi.
3. Ibid.
4. Information received from a resident of the village.

of crafts is persisting in a particular street or locality. As for example mention may here be made of the Jodhpur town in Rajasthan where the goldsmiths and the silversmiths are reported to have settled in particular localities such as Shāhpurā, Sonār-ki-bās, Brahmpurī and Hattirām-ke-oudhā.[1] In Dhārāvi area of the Bombay city there is a locality known as Kumbhārwāḍā (locality of the Kumhārs) which is mainly inhabited by the potters.[2] In Calcutta, the potter's craft is localised in two areas namely Kumārṭuli and Kālīghāṭ, while the craft of the conch-shell cutters is mainly located in the Amherst street area of Central Calcutta and the Sānkhārīpāḍā area of South-West Calcutta. The names of the localities i.e. 'Kumārṭuli' and 'Sānkhārīpāḍā' also indicate that these localities are mainly inhabited by the Kumārs (potters) and the Sānkhāris (conch-shell cutters).[3] In Delhi the potter's craft is located at Jhāṇḍewālān (near Karol Bagh), while the manufacture of jewellery and ornaments is localised in the Chandni Chowk area of the city.[4] In Darbhanga, Bihar, the potter's craft is located in two localities of the town, namely Maulāganj and Hasān Chak.[5] In Benaras, Uttar Pradesh, it will be observed that the silk and brocade work is principally localised in the Adampurā and Jaitpurā wards to the north of the city which constitute the chief

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1. Based on the data collected by the Social Studies Division, Office of the Registrar General, India, New Delhi.
2. Ibid.
3. Based on personal observation.
4. Ibid.
5. Based on the data collected by the Social Studies Division, Office of the Registrar General, India, New Delhi.

residential area of the Muslim weavers. Elsewhere the craft is located in Madanpurā, Nawābganj, the Reori Talāo area and Lallapurā, all lying to the south-western part of the city.[1] As regards toy industry it has been stated that the industry is localised in the Khojwā - Nawābganj area, Rāmapurā, Pierce Kalān, Kāshmīriganj, Nai Basti and Hanumānpurā and employs about 500 workers.[2] In Srinagar, Kashmir, the wood-carvers and the carpenters are settled in the Bārāmulā area of the town.[3] There is also a town named Gajendragad (Distt. Dharwar, Mysore State) where the weavers (locally known as Nekārs) are mostly settled in a particular area of the town.[4]

The localisation of crafts in a particular village or in a particular locality of a town or city has, thus, played an important role in the economic life of the craftsmen who have retained traditional prejudices even for the betterment of their prospects.

4. Mobility of occupation

In ancient India most of the crafts were organised on a hereditary basis, and technical talent descended from father to son and was confined to particular family. The ancient texts

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1. R.L. Singh, "Banaras - A study in Urban Geography", Banaras, 1955, p.82.

2. Ibid, p.84.

3. Based on the data collected by the Social Studies Division, Office of the Registrar General, India, New Delhi.

4. Based on the information received from a resident of the town.

enjoin that one's hereditary duties had to be followed.[1] But neeessities of life would know no law. It had to be recognised that though particular avocations and activities were prescribed for the four varṇas, each varṇa might in time of difficulty follow the occupation peculiar to the caste immediately below it, but should not fellow the avocations peculiar tonthe higher varṇas.[2] The person with changed avocation was expected to revert to his proper avocation when the difficulty was over. If the reversion did not take place in course of a few generations, the original caste would be lost and new one adopted or presumed.[3] It, thus, appears that though normally the crafts were organised on a hereditary basis, the mobility of occupation was permitted by the ancient law-givers. It was not absolutely necessary that the son would fellow his father's traditional occupation. Indeed the choice of occupations was quite free. Thus in the Vinaya Piṭaka[4], we find parents discussing the best profession which their wards might choose without a reference being made to the father's profession. In the Chullavagga[5] even the monks are allowed the use of a loom and of shuttles, strings and all the apparatus belonging to a loom. In the Kuśa Jātaka[6], a prince in his infatuation for a girl apprentices himself incognito in succession to the potter,

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1. Gautama, XI, 9-10; Vaśiṣṭha, 19. 7-8; Vishnudharmasūtra III.3; Mārkaṇḍeyapurāṇa, 27 and Maṭsya Purāṇa, 215. 63.
2. Vaśiṣṭha, II. 22-23.
3. Vaśiṣṭha, II. 19-23; Vishnudharmasūtra, II.15 and Gautama, X.1-7.
4. I. 77 and IV.128.
5. V.28.
6. No.531.

basket-maker, etc., without a word being said as to his social degradation when these vagaries became known. We also find reference to a prince who only consents to marry when a princess is found exactly like a golden image which he himself had fashioned and which was far superior to that made by the chief smith employed for the purpose.[1] Again we hear of a weaver looking on his handicraft as a mere make-shift and changing it offhand for that of an archer.[2] Reference may also be made of one Brahmin becoming a carpenter.[3] Even the potter might have his apprentices from outside his community. A Rathakāra (chariot-builder) could also make his living by learning the art of taming horses and building houses. A section of the Rathakāra caste is said to have worked also with leather.[4]

Apart from the choice of profession, the craftsmen were also allowed to change their vocation in times of economic necessities. Thus the Māndāsor Inscription of Kumāragupta I and Bandhuvarman[5] dated A.D. 436 records that a guild of silk-weavers migrated in a body from Lāṭa-Vishaya near lower Narmadā region to the inland country of Daśapura or Māndāsor in Western Malwa. Some of the members of the guild had changed their vocation of weaving and had taken various professions from

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1. Ibid.
2. Jātaka, II.87.
3. Jātaka, 475.
4. See A.N. Bose, Social and Rural Economy of Northern India (Cir. 600 B.C. - 200 A.D.), Vol.II, 1945, pp.456-57; See also Richard Fick, The Social Organisation in North East India in Buddha's Time (Translated by S.K.Maitra), University of Calcutta, 1920, Chap.XI, Casteless Professions.
5. Corpus Inscriptionum Indicarum, Vol.III (Inscriptions of the early Gupta kings), Ed. J.F.Fleet, London, 1888, pp.81-84.

soldering to astrology. The chief cause of this migration to the inland country was probably the failure of the profitable silk trade with the West. Many of the weavers might have found it expensive to have their products conveyed to sea for export, and local demand was not sufficient to keep them all employed. As a result, many of the former silk-weavers had to abandon silk-weaving and were forced to take up other vocations, from astrology to soldering.1

The tradition of changing one's occupation continued even during the Mahomedan period, when there was no bar to one's taking to a trade of one's choice, and the rigidity of castwise avocation began to give in. If a member of a community should change his profession and take to the profession of some other community then he became a member of the guild of the later community. Thus, as Sir George Birdwood remarks, "the trade guilds of the great poly-technical sites of India are not, however, always exactly coincident with the sectarian or technical caste of a particular class of artisans. Sometimes the same trade is pursued by men of different castes, and its guild generally includes every member of the trade it represents without strict reference to caste."[2] Even to-day the mobility of occupation is considered to be an important factor in the economic life of the people, though side by side castewise avocations continue not only by the inertia of

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1. S.K. Maity, Economic Life of Northern India in the Gupta Period (cir. A.D. 300-550), Calcutta, 1957, Chap. VI, p.138.
2. Industrial Arts of India, 1880, p.138, See also A.K. Coomaraswamy, The Indian Craftsman, 1909, p.67 and K.R.R. Sastri, South Indian Guilds, pp.6-32.

habits, but also by the force of traditions and texts. The constitution of India has also given all the citizens the right to practise any profession, or to carry on any occupation, trade or business.[1] As a result the heredity of occupation has lost its age-old importance, and due to economic pressure many members of the artisan castes have been compelled to adopt some other occupations which are more profitable than their traditional ones. G.S. Ghurye[2] has rightly observed, "At present many members of the Brahmin caste are seen engaged in almost any of the occupations, excepting those of casual labourer, sweeper, and scavenger. Many members of the various artisan castes are teachers, shop-keepers, bank clerks, shop assistant, and architects." While conducting a survey of the potter's craft of Darbhanga, Bihar in 1967 it was found that some of the artisan families had given up their traditional occupation in favour of shop-keeping, service, etc. Panameswar Pandit, once a potter, was found to be a shop-keeper. His eldest son was helping him in his business, while his second son was a medical student.[3] While visiting a village, namely, Dadpur in the district of Burdwan, West Bengal in 1968 it was found that the sons of an ironsmith, though trained in their traditional occupation, were engaged either in business or in service.[4]

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1. Article 19(g) of the Constitution.
2. Caste, Class and Occupation, Bombay, 1961, p.204.
3. Based on the data collected by the Social Studies Division, Office of the Registrar General, India, New Delhi.
4. Based on personal observation.

The Census Organisation, New Delhi, undertook a comprehensive survey of the textile dyeing and hand-printing in Jawad, Tarapur and Ummedpura in Mandsaur district and Bhairongarh in Ujjain district of Madhya Pradesh. As a result of survey it has been found that a good number of artisans have given up their traditional craft and taken to other occupations like running of a flour mill, tailoring or going for service. Again, many of them have started grocery shops, cycle repair shops and other types of commercial establishments.[1]

It thus appears that the heredity of occupation is no longer strictly adhered to by many artisan castes. This is due to the reason that now-a-days the local demand for household crafts is not sufficient to keep all the members of the artisan castes employed. As a result, the unemployed members are forced to take up other vocations. A craftsman prefers to adopt some other avocation when his hereditary occupation fails to support him in the struggle for existence.

5. Wages.

The village artisans mostly used to get their wages in the barter system which was very common in ancient India.[2] Thus the dues of the village potter, smith, carpenter, etc. were to be paid in terms of paddy, rice, cloth, garments, coverlets, cows, horses, cowries, pearls, etc. Even now such a system continues to some extent in the Indian villages.

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1. B.K. Roy Burman (ed.), Census of India 1961, Vol.I, Monograph series, Part VII-A, op.cit. pp.23-24.
2. Gautama, VII. 61; Vasistha, II.37.

Pāṇinī refers to both unskilled (Karmakāra)[1] and skilled artisans (rāja-śilpins)[2]. Perhaps the rāja-śilpins enjoyed the patronage of kings from whom they were so named. The wage of the unskilled workmen was known as bhṛiti (Karmani bhṛitau)[3], while that of the skilled ones as vetana. In the Arthaśāstra, vetana, however, includes both wages paid to artisans[4] and salaries paid to government servants.[5] The skilled artisans used to earn their livelihood (jīvikārtha)[6] through either wages, or as food received. The system of receiving a fixed payment in return for stipulated services rendered was called parikrayaṇa, the employer parikretā and the man employed parikṛita[7]. A hired workman was named after the period for which he was engaged, e.g. māsika[8] and the amount of wages fixed to be paid e.g. pañchaka.[9] A month was the unit of time for calculating wages, as seen in the examples to sūtra[10], viz. Karmakāraḥ māsikaḥ māsam bhṛitaḥ. Pāṇinī condemns vile artisans as pāpa-śilpa.[11] The grāma-taksha[12] was a carpenter who went to work on daily wages to the house of his clients in the village. On the other hand, the Kauṭa-taksha was one who worked

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1. III. 2. 22.
2. VI. 2. 63.
3. III. 2. 22.
4. Arthaśāstra, II. 23, p.114.
5. Ibid, V.3, p.248.
6. Panini, VI. 2. 73.
7. Ibid. I. 4. 44.
8. Pāṇinī, V. 1.80.
9. Ibid. V. 1. 56.
10. V. 1. 80.
11. VI. 2. 68.
12. V. 4.95.

on his own account in his own workshop (kuṭī) and was thus of a higher status. This distinction still remains in rural economy.

The craftsmen also received money fees. The Arthaśāstra[1] specifies the fees for metal workers. They were required to manufacture gold and silver coins. 1 māṣa (of silver. This means 1/16 of value, 1 dharaṇa being 16 māṣas in weight) is the fee for the manufacture of a silver dharaṇa; 1/8 portion for manufacture of a suvarṇa. Fees rise according to the skill of the worker. Fees shall be 5 p.c. or 1/20 for manufacture of articles from copper, brass, etc. 1 and 2 kākaṇis are fees for manufacturing an article of a pala in weight of lead and iron respectively.

The Śukranīti[2] assigns the goldsmith 1/30, 1/60 or 1/120, according as the workmanship is excellent, mediocre or inferior; 1/240 in the case of a bracelet (kataka) and 1/480 for mere melting. The grades of the silversmith are $\frac{1}{2}$, $\frac{1}{4}$, 1/8, according to quality of work and 1/16 in the case of a bracelet. The fee is $\frac{1}{4}$ for copper, zinc and jasada metal; $\frac{1}{2}$, 1, 2, or 8 times in case of iron. Thus Śukra's law is more equitable giving more weight to workmanship and less to the value of the metal worked upon.

The Arthaśāstra also ordains that the artisans would be provided with wages and provisions in proportion to the amount of work done by them.[3] In its regulations on textile labour, the Arthaśāstra laid down that wages were to vary according to the quality and quantity of the yarn produced. Only artisans who

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1. IV. 1. Munich Ms.
2. IV. 653-59. See also A.N. Bose, Social and Rural Economy of Northern India, (cir. 600 B.C. - 200 A.D.), Calcutta, 1961, Vol.I, Book II, Chap. III, p.240.
3. Arthaśāstra, Book II, Chap. XXIV.

could turn out a given amount of work in a given time might be engaged on fixed wages.[1] According to Kautilya, wages were to be paid for work done, but not for the work that was not done.[2] In his regulations on wages, Vishnu[3] also states that a workman, who abandoned his work before the expiry of the term would forfeit his whole wages and had to pay a fine of 100 panas to the king.

Artisans and other workmen, serving of their own accord, would obtain as much wages as similar persons employed elsewhere usually got or as much an expert (Kusalah) would fix. Goldsmiths' wages were prescribed in the Arthasastra at different rates for the different jobs. Skill as well as the nature of the work determined the wages. Payment might be withheld if the workmanship was below the employer's satisfaction.[4]

The weavers of linen or silk or woolen clothes were required to faithfully carry out the work entrusted to them. Any deviation from the quality or weight, etc. was punishable. Artisans had to fulfil their engagements in accordance with their agreement as to time, place, and form of work. Those who postponed their engagements under the excuse that no agreement as to time, place, and form of work had been entered into, would, except in troubles and calamities, not only forfeit one-fourth of their wages, but also be punished with a fine equal to twice the amount of their wages.[5]

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1. Ibid. Book II, Chap. XXIII.
2. Ibid. Book III, Chap. XIV. See also Vishnu, V. 153-157.
3. V. 153.
4. Arthasastra, Book III, Chap. XIV.
5. Ibid. Book IV, Chap. I; Manu, VIII. 179.

Guilds of workmen as well as those who carried on any co-operative work would divide their earnings (vetanam or wages) either equally or as agreed upon among themselves.[1]

The Superintendent of weaving in Kauṭilya's state[2] would employ qualified artisans to manufacture various types of cloths, garments, blankets and curtains. Widows, crippled women, girls, mendicant or ascetic women, mothers of prostitutes, old women servants of the king and prostitutes (devadāsī) would be employed to cut wool, fibre, cotton, hemp, and flax. Those women who did not stir out of their houses, those whose husbands had gone abroad, and those who were crippled might, when obliged to work for subsistence, be provided with work of spinning out threads in due courtesy through the medium of maid servants of the weaving establishment. Those women who could present themselves at the weaving house would at dawn be enabled to exchange their spinnings for wages. If the Superintendent looked at the face of such women or talked about any other work, he would be punished with the first amercement. Delay in paying wages would be punished with the middlemost amercement. Likewise, when wages were paid for work that was not completed. The law-giver threatened that a woman who having received wages did not turn out the work would have her thumb cut off.

Wages would be fixed according as the threads spun and in proportion to a greater or less quantity manufactured, and in

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1. Ibid. Book III, Chap. XIV.
2. Ibid. Book II, Chap. XXIII.

consideration of the quantity of thread spun. Wages would be cut short if, making allowance for the quality of raw material, the quantity of the threads spun out of it was found to fall short. Those who misappropriated, stole or ran away with the raw material supplied to them would be severely dealt with. Weavers, when guilty, would be fined out of their wages in proportion to their offences.

Disputes regarding wages used to be decided on the strength of evidences furnished by witnesses. In the absence of witnesses, the master who had provided his servant with work would be examined. Failure to pay wages would be punished with a fine ten times the amount of wages or six panas. Misappropriation of wages would be punished with a fine of twelve panas or of five times the amount of wages.[1]

During the mediaeval period the village artisans probably used to get their remuneration either in kind or in fees. As for example, mention may here be made of the village potters who in return for their services received some remuneration, "either in allotments of land from the corporate stock, or in fees, consisting of fixed proportions of the crop of every farmer in the village"[2]. Besides, there were a large number of workmen who depended on state patronage and received their daily wages. Bārbosā says that it was the custom among the Muslims and Indians that when the workmen came to begin any work they gave them a certain quantity of rice to eat and when they departed at night they gave them a fanam each[3].

1. Ibid. Book III, Chap.XIII.
2. Wilks, Historical Sketches of Mysore, Vol, I, pp.73-74.
3. Bārbosā, II, p.99.

The account is confirmed by Nuniz who describes the system at Vijayanagar as follows : "He (the king) has one thousand six hundred grooms who attend to horses and has also three hundred horse trainers and two thousand artificers namely blacksmiths, masons and carpenters ..... These are the people he has and pays every day; he gives them their allowance at the rate of the palace".[1]

From the Āin-i-Akbarī we are told of the skilled craftsmen maintained in the kārkhānājats and palaces of the Moghals. Akbar had in his service many artists who became eminent by their productions. Besides artists, he had also weavers, jewellers and damascenes, inlayers and enamellers, engravers and lapidaries, and craftsmen of all kinds. The emperor not only patronised these craftsmen, but also fixed their wages.[2]

The traditional system of remuneration in kind or in fees continues even till to-day to a great extent in Indian economic life. The payment of village craftsmen is "either a payment in kind, or a grant of land, besides perquisites on special occasions. For their customary services they are repaid at harvest-time, receiving a fixed proportion of sheaves of grain from the crop collected on the threshing floor, or they may be given a share of the communal land.[3] The village craftsmen also receive money payment either on daily wage basis or on contract basis. In the towns and cities, however, the skilled craftsmen employed in the

1. Robert Sewell: A Forgotten Empire, p.381. See also T.V. Mahalingam, Economic Life in the Vijayanagar Empire, University of Madras, 1951, p.108.
2. Āin-i-Akbarī, H.Blockmann, Calcutta, 2nd edition, 1927, pp.235-236.
3. A.K. Coomaraswamy, The Indian Craftsman, London, 1909, p.5, See also Baden Powell, Indian Village Community, p.17.

workshops of the master craftsmen are either paid monthly salary or daily wages. The young apprentices who undertake training either under a master craftsman or in a training-cum-production centre also receive fixed monthly stipend or daily wages in lieu of services rendered by them. In case of craftsmen working on a contract basis, their earnings are sometimes reckoned at either by the weight of the main raw material on which they work, or by the volume of finished work they turn out.

6. Marketing.

The handicrafts produced in the villages, towns and cities are largely, if not entirely, for commercial use. The products are generally disposed of through the following channels[1]:

(1) Sale at residence.
(2) Hawking.
(3) Local markets.
(4) Fairs or melās.
(5) Weekly or bi-weekly hāṭs.
(6) Established marketing channels in specific areas.
(7) Supply on contract or order basis.
(8) Sale shops or depots of the Co-operative societies.
(9) Sales emporia of Central or State Governments.
(10) Exporters including private and public organisations.

Sale at residence:

A part of the articles produced by the craftsmen are sold directly from their residences or workshops. The customers go to the residences or workshops of the craftsmen, and purchase the

1. Based on personal observations as well as the information received from the All India Handicrafts Board, R.K. Puram, West Block No.7, New Delhi-22.

articles according to their choice.

Hawking:

Sometimes the craftsmen dispose of their products by hawking. They take their products to the near by hāṭs, villages and towns, and sell them directly to the consumers.

Local markets:

The rural artisans often sell their products in the local markets where other articles of day to day use are also sold. In the local markets the products are generally displayed in the stals for sale. The customers purchase their required articles from these stals.

Fairs or melās:

In India, fairs or melās generally take place on certain religious occasions or festivals. The craftsmen living in nearby villages or towns participate in these fairs or melās, and dispose of their products directly to the consumers. The products are also sold in the industrial fairs organised by the Central or State Government.

Weekly or bi-weekly hāṭs:

Weekly or bi-weekly hāṭs are generally held in the rural areas. The craftsmen living in the adjoining areas take their products to these hāṭs and dispose them of directly to the consumers.

Established marketing channel in specific areas:

There are established markets for particular crafts in the specific areas of many of the towns and cities in the country.

The articles displayed in the shops for sale are either manufactured in the workshops attached to the shops or procured through dealers or commission agents. Sometimes the articles are also purchased directly from the local craftsmen on contract or order basis. In the organised markets the products are generally sold direct to the customers. Sometimes the shop-keepers also receive orders from the consumers, and supply the finished products according to their specification.

Supply on contract or order basis:

The craftsmen also dispose of their products on contract or order basis. They receive contracts or orders either from the individuals or from the dealers, traders and contractors, and supply the articles according to their specification. Sometimes the craftsmen receive some advance payment for purchasing the main raw material, and after the processing is over, they get wages on piece-rate basis.

Sales shops or depots of the co-operative societies:

The co-operative societies organised by the craftsmen have got their own shops through which products of the societies are disposed of direct to the consumers. Sometimes the societies execute orders of the State Industries Departments. In such cases the articles are handed over to the State Industries Departments to be disposed of through their different emporiums.

Sales emporia of the Central or State Governments:

Handicrafts goods are also sold through the Central or State Cottage Industries emporiums. The products procured by these

emporiums on order basis either from the co-operative societies or from the craftsmen, are disposed of direct to the consumers. Sometimes these emporiums also dispose of these products to different private and public organisations including the exporters.

Exporters including private and public organisation:

The craftsmen do not undertake the export of their products directly. They receive orders from the dealers, exporters and the exporter-cum-dealers at Delhi, Bombay, Madras and Calcutta, and supply the goods to them. Through their individual efforts these dealers, exporters and exporters-cum-dealers establish commercial contacts with foreign markets, and export the handicraft goods which are in the greatest demand.

Now-a-days Indian handicrafts are exported to over 80 countries all over the world. The most important markets of Indian handicrafts are Belgium, France, West Germany, Italy, Natherlands, Denmark, Sweden, Switzerland, U.K., U.S.S.R., Australia, Hong-Kong, Japan, Malaysia, Singapore, Aden (SYPR), Kuwait, Lebanon, Iraq, Sudan, Ethiopia, Kenya, Zambia, Czechoslovakia, Saudi Arabia, U.S.A. and Canada. Of the principal handicrafts exported in these countries special mention may here be made of precious, semi-precious and synthetic stones, jewellery of precious metals, gold and silver jewellery, woollen carpets, rugs and druggets with nāmdāhs, art metal wares, wood wares, hand-printed cotton textiles, shawls, zari goods, ivory products, carpets, rugs and durries of

cotton, embroidered goods, stone works, pottery, articles of wicker work, bamboo, etc., dolls and toys.[1]

Exports of handicrafts "reached a record figure of Rs.94.72 crores during 1969-70 as against Rs.76.47 crores in the previous year thereby showing an increase of Rs.18.25 crores or 23.9 per cent. The rate of growth in the exports of handicrafts during 1969-70 is very significant specially when compared to a rise of about 4 per cent in the total exports of our country. Consequently, the share of exports of handicrafts in the total exports of our country has increased from 5.6 per cent in 1968-69 to 6.7 per cent in 1969-70 and handicrafts have become one of the important export items alongwith jute manufacture, tea, iron ore, engineering goods and leather manufacture."[2]

Now let us examine as to whether the present-day marketing channels existed in ancient and mediaeval India. As it appears, in those days Indian handicrafts were disposed of through sale at residence, local markets or established marketing channels in specific areas, supply of contract or order basis, and export in foreign countries. References to these marketing channels are, however, found in some of the ancient and mediaveal Indian texts. In the Jātakas it is mentioned that the craftsmen following a particular profession or craft used to live in a place near to the market for their products of labour. Thus we find the ivory-workers' bazar[3],

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1. Information based on the circular No.HB/PR/Exp.Stat/69-70 dated the 30th October, 1970, issued by the All India Handicrafts Board, West Block No.7, R.K. Puram, New Delhi-22.
2. Ibid.
3. Sīlavannāga Jātaka, No.72; Kāsāya, No.221.

and the weavers' ward of Benares[1]. A Jātaka[2], however, speaks of carpenters outside the city, while the Jaina Uvāsagadasāo[3] tells us of a village of 500 potters outside the city of Palāsapura. It is likely that the industrial villages lying in the vicinity of cities supplied the needs of the urban population. The goldsmiths seem to have settled in the town where he could cater the demands of the richer folk, and he is not found settled in exclusive villages like the black-smith in the kammāragāma.[4] A carpenter's village with 500 or 1,000 families is often seen in the frontier of the state of Kāśī or in the outskirts of the city of Benares[5]. There was a weavers' village near Benares under a headman[6], and a smith's village of 1,000 houses is referred to[7]. The craftsmen purveyed their goods to the people of neighbouring towns and villages or executed orders from them jointly or severally[8].

The aforesaid references bring out some important features of ancient Indian marketing channels. Firstly, there were local markets or established marketing channels in specific areas in the cities or towns where the craftsmen had their own shops, and most probably used to sell their products directly to the urban population. Secondly, there were industrial villages near the cities and

1. Bhīmasena Jātaka, No.80.
2. IV. 207.
3. VII. 184.
4. Jātaka, V.424 commentary; Dīghanikāya II. 88; Milindapañho 331; Rāmāyana II. 83. 15; Mathurā Inscription, Epigraphia Indica, Vol.II. 14.
5. Jātaka I. 247, IV. 159, II. 18, 405 and IV. 207.
6. Dhammapāla's Commentary on Therigāthā, PSS. 157 ff.
7. Jātaka III. 281.
8. Bṛihaspati, XVII. 11.

towns, and the craftsmen living in these villages either disposed of their goods to the people of neighbouring towns and villages or executed orders from them jointly or severally. It is not, however, known whether the products were disposed of by hawking or through local dealers, traders, contractors or commission agents. As regards sale at residence no specific evidence is available, but it is likely that the craftsmen living in the rural or urban areas used to sell their products directly from their residence or workshops.

As regards export of Indian handicrafts in foreign countries we come across a few references in ancient and mediaeval Indian texts. The export of cloth is attested to by the Tirthakalpa, a later Prākrit work, where it is stated that a large quantity of cloth was taken to Bharukachchha (Broach) by a merchant named Dhaneśvara from Ceylon.[1] The anonymous author of the Periplus of the Erythraean Sea also mentions that there was a brisk trade between India and Ceylon.[2]

India's commercial relations with China were also flourishing. Po-tie (a fine textile, probably muslin) was produced in India[3], and as early as A.D. 430 Indian Po-tie was sent to China from Ho-lo-tan on Jāvā[4]. In return Chinese silk was imported in

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1. Archaeological Survey of India, Annual Report, 1905-1906, p.144.
2. The Periplus of the Erythraean Sea, translated by W.H.Schoff, London, 1912, p.47.
3. Sino-Iranica : Laufer, Berthold, Chicago, 1919, p.491.
4. Ibid. The Periplus also refers to muslins of the finest sort called 'Gangetic' which were brought down to Tāmralipti (Mod. Tamluk, Distt. Midnapore, West Bengal) for export (Periplus 63).

India. Kālīdāsa mentions this silk fabric as Chīnāṁsuka[1]. During the time of Kauṭilya also Chinese silk (chīnapaṭṭa)[2] was well known as one of the most fashionable textiles among the richer sections of the society.

During the mediaeval period different types of handicrafts were exported in foreign countries. Gujarat's cheap resist-dyed calicoes were much in demand both in the middle-east and in the Malaya Archipelago.[3] The Chinese account of the fifteenth century describing the voyages of Cheng - Ho and his retinue also states the import of fast dyed printed cottons from Calicut.[4] India's textile trade in the seventeenth century was with Netherlands, England, Protugal, France and Denmark.[5] At that time painted and printed calicoes constituted the most important class of Indian fabric exported from some centres in Western India.[6] It is reported that calicoes were exported in England, while the white cotton clothes were exported to places in Southern Asia, Indian Archipelago, and in small quantities to Japan. Bāftās or cotton cloths dyed red-blue were sent to Mozambique, Abyssinia and Phillipine Islands, Sumātrā and the Far East. Cotton fabrics and cloths

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1. Kumārasambhava, VII. 3: Abhijñāna Śakuntalam, I. p.838.
2. Arthaśāstra, Ed. R. Shamasastry, Mysore, 1924, p.83.
3. John Irwin, "Indian Textile Trade in the Seventeenth Century", Journal of Indian Textile History, No.1, 1955, p.24.
4. R.J. Mehta, The Handicrafts and Industrial Arts of India, Bombay, 1960, p.119.
5. John Irwin, op.cit., p.5.
6. Ibid. p.12.

worked in gold and silver were produced in Benares, Ahmedabad, Bihar and Agra. These were exported to Asiatic and European countries both from the east as well as from the western coasts. The place of honour amongst the exports was occupied by the muslins. Chintz was both locally consumed as well as exported to Europe and Asiatic countries.[1]

At the close of the seventeenth century Europe became a good customer for our taffetas and brocades. Dyeing and weaving of silk having been improved by the East India Company in Bengal by importation of dyes, export of silk goods received a good impetus. Tusser being the speciality of Orissa, was exported from Orissa ports.[2]

The study of the economic life of the craftsmen with special reference to Guild organisation, Apprenticeship, Localisation of crafts in specified areas, Mobility of occupation, Wages and Marketing reveals the fact that the traditional type of economic organisation of the craftsmen may have undergone some changes in the course of ages, but its basic characteristics have almost remained unchanged or unaffected over the centuries.

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1. Tavernier's Travels, I, pp.5, 27, 72; Storia de Mogor ii, pp. 83, 125. See also S.S. Kulshreshtha, The Development of Trade and Industry under the Mughals (1526 to 1707 A.D.), 1964 p.232.

2. Khulasat; Per Mss. p.25a; Chahar, Per Mss. p.94b.

C H A P T E R - IV.

TECHNIQUES OF CRAFTS

(1) Techniques of Pottery and Terra-cotta, (2) Techniques of Stone-carving, (3) Techniques of Wood-carving, (4) Techniques of Ivory-carving, (5) Techniques of Metal-image Casting by Cire-perdue Process, (6) Techniques of Textiles, and (7) Techniques of Gold and Silver Ornaments.

Pages : 181 - 309.

CHAPTER - IV : TECHNIQUES OF CRAFTS.

"The study of technology is an essential key to the understanding of a people's culture"[1]. This is a very significant statement made by M.J. Harskovits in his monumental work on "Man and His Works". It cannot be denied that in man's struggle for survival, resources and techniques are his greatest assets.

In India, the study of the technology of crafts has not been made in a systematic manner. A good deal of work has, however, been done in respect of the artistic appreciation, socio-religious significance and aesthetic appraisal of ancient, mediaeval and contemporary Indian Art, Architecture, Sculpture, Painting etc., but so far as the technology of crafts is concerned, only a few casual references from ancient texts or some results of stray investigations on the technology of a few excavated and explored artifacts have been recorded without any fruitful analysis. As a result, we have so long been deprived of obtaining a true picture of the technology of a good number of traditional crafts with special reference to their evolution, development or ups and downs in different epochs of Indian History. But if we carefully examine the materials at our disposal, there is some possibility of tracing out the sequences of the technology of at least some of the important age-old crafts flourishing in different periods starting from the earliest times down to the present day. In this chapter an attempt is being made to study the techno-history of some of the most important traditional

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1. M.J. Harskovits, Man and His Works, New York, 1952, p.241.

crafts of India such as pottery and terracotta, stone and wood-carving, ivory, image-making by cire-perdué process, textiles and gold and silver ornaments which still play a significant role in the socio-economic life of the sub-continent. It is true that many of our craftsmen have given up their traditional occupations and have taken to petty shop-keeping, service and even professions like law and medicine; but still there are thousands of craftsmen who patiently and unobtrusively ply the trade of their fore-fathers, and produce masterpieces of crafts specimens with the aid of simple age-old tools, techniques and equipments.

1. Techniques of Pottery and Terracotta:

In India, ancient technology has its root in the evolution of potter's art of clay modelling. The potter's craft, as it appears, can be classified into two main categories such as pottery-making and manufacture of terracotta objects.

A. Techniques of Pottery:

The evolution of the technique of pottery-making in India probably took place in pre-historic times. In the beginning, hand-modelled pottery was introduced by the potters. There were no kilns specially built for firing pots in pre-historic times. Pots were placed in circular pits and a small fire was built around after partially covering the pots with sherds. Later on pots were built by coiling ropes of clay which was squeezed, beaten and smoothened. Even to-day, this method is adopted for making very large storage vessels. The potter's wheel was unknown. The earliest occurrence of this type of hand-modelled pottery in

association with microliths is in the late levels of Langhnaj in North Gujarat, Nāgārjunakoṇḍā in Andhra Pradesh and Bhirbhanpur in West Bengal.[1]

(i) Neolithic pottery: The potter's wheel was invented at a late stage, most probably in the Neolithic Age when with a change from a food gathering to food producing economy, the demands for storage also increased. But it is very interesting to note in this context that side by side with the sheel-made pottery, the hand-made pottery was still the order of the day. As for example, mention may be made of a coarse black or grey ware which has been found in the early Neolithic levels at Nāgārjunakoṇḍā and Piklihal in Andhra Pradesh, and Brahmagiri and Sangankallu in Mysore State. A few wheel-turned vessels especially bowls and jars have also been found along with the hand-made ones.[2] The technique of the hand-made coarse grey ware is reported to be interesting. Sometimes the surface was treated by a thin slip of the same clay and burnished before firing. Round bases were first moulded, and then the complete shape of the pot was made by placing it on the convex surface of an inverted bowl. The saucer was turned by one hand and then the shaping of pot was done by the other.[3] This sort of

1. S.R. Rao, "Ceramics of the Indus Valley in Gujarat", Marg, Vol. XIV, No.III, June, 1961, p.20. See also V.D. Krishnaswami, "Progress in Prehistory", Ancient India, No.9, 1953, pp.67-71.
2. S.R. Rao, Ibid, p.20.
3. Z.D. Ansari, "Evolution of Pottery Forms and Fabrics in India", Marg, Vol. XIV, No.III, June 1961, p.4.

mechanism is still being practised by the potters in some parts of South India.

(ii) Chalcolithic pottery:

The notable technological advancement in the pottery craft appears to have taken place during the Harappan and the Post-Harappan Chalcolithic periods. The great bulk of the Chalcolithic pottery is wheel-turned, but some hand-made pottery has also been recovered from a good number of Chalcolithic sites. So far as the clay is concerned, it was well-levigated and heavy. The firing was uniform and hence most of the pottery has a dull-red appearance. Sometimes the lower portions of the pots were trimmed to give the desired shape. The pots were painted with manganiferous haematite, when fired gave dark-brown to black colour.[1] For the Red Ware fine clay was used for the paste, and sand as a temper. No coarse degrainssant or vegetable fibre was used. Carbonaceous matter if any in the clay was completely burnt out. The pots were well fired in oxidising condition[2]. The vessel of the Buff Ware were made of a calcareous clay. Though the pots were fired under ordinary oxidised conditions, the presence of lime prevented the oxidised iron from developing into a red colour, while the clay burnt to buffish yellow. Vessels in the Buff Ware were treated with a buff slip and painted with chocolate. Occasionally both buff and red slips were applied, and the painting was executed in pink or chocolate.[3] The composition

1. Stuart Piggott, Prehistoric India, Penguin Books, 1953. See also Sir John Marshall, Mohenjodaro and the Indus Civilization, London, 1931 and R.E.M. Wheeler, The Indus Civilization, Cambridge, 1953.
2. S.R. Rao, "Ceramics of the Indus Valley in Gujarat", op.cit.p.21.
3. Ibid.

of the body material of the Painted Black and Red Ware was similar to that of the Red Ware. The difference was, however, in the technique of firing. The vessels were kept inverted in the Kiln subjecting the exterior to oxidising conditions and the interior to reducing conditions, thereby preventing the oxidisation of ferrous compounds. The desctruction of carbonaceous matter used as degrainssant was also incomplete. Saw dust or some vegetable matter might have been filled in the vessel while firing under reducing conditions. The result was that the interior was black and the exterior dull red to buff in colour. The vessels were painted in white over black only in the interior.[1] The Lustrous Red Ware was evidently well-burnished with a burnisher, such as a piece of pebble or a piece of haematite. Sometimes both the surfaces carry a red lustre due to burnishing.[2] The Jorwe Ware[3] (named after its key site in the Deccan), a special type of pottery of the Post-Harappan period, was made from a well-levigated clay, and fired to a high temperature. The vessels of the Jorwe Ware were not entirely made on the wheel, but were partly hand-made. The rounded base was made by scraping, moulding, in a concave saucer or by beating with a tapper and a dabber. Storage-jars were entirely hand-made.

(iii) Painted Grey Ware: In the beginning of about first millennium B.C. a different type of pottery called the Painted

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1. Ibid.
2. Ibid.
3. Z.D. Ansari "Evolution of Pottery Forms and Fabrics in India", op.cit. p.8.

Grey Ware appeared in the Punjab and Uttar Pradesh.[1] The distinctive features of this ware are the superior quality of the paste formed of well-levigated clay and fine thin well-burnt fabric achieved with an equally distributed heat in the kiln and agrecably smoothed grey surface. The colour of the ware varies from ashy to dark grey, the greyness being apparently the result of reducing conditions in the kiln. The baking was, however, perfect. Most of the types represented in the ware were wheel-turned, though hand-made examples were not altogether wanting. The pots had painted designs, usually in black pigment, but sometimes in chocolate or reddish-brown instead.

(iv) Northern Black Polished Ware (N.B.P.): In the second-half of the first millennium B.C. we come across a significant type of pottery throughout the Gangetic Valley which bears highly lustrous steel blue surfaces. The core and other technical details are quite akin to the Painted Grey Ware referred to above. This pottery, invariably made of nicely-levigated clay and potted on a fast spinning wheel, was usually well-fired. Some scholars suggest that the N.B.P. pots were dressed with haemitite by keeping them once again on the wheel in leather hard state before firing. In some cases it is found to be partly grey and partly brown, and in other case it is reddish.[2] The distinctive glossy brilliance of

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1. B.B. Lal, "Excavation at Hastināpura and Other Explorations in the Upper Gaṅgā and Sutlej Basins 1950-52", Ancient India, Nos. 10 and 11, 1954 and 1955, pp.5-151. See also B.B. Lal, "The Painted Grey Ware of the Upper Gangetic Basin: An Approach to the Problems of the Dark Age", Jour.Roy. Asiatic Soc. Bengal (Letters), XVI, N.S. (1950), pp.89-102.
2. Ancient India, No.I (1946), P.27. See also J.S. Nigam, "Northern Black Polished Ware", Marg, Vol.XIV, June, 1961, No.III, p.39.

this ware has raised obvious equiries as to the method of its manufacture. From the published report of the Archaelogical Chemist[1], it appears that after being turned on the wheel, the pots were 'wet-smoothed' and burnished to increase the compactness and impermeability of the pots and thereafter dressed with a highly ferruginous clay, the lustre being achieved by the incipient fusion of the slip in the firing process itself. It is quite possible that the smooth lustre may have been the result of the employment as a finish of a clay solution inwhich the size of the constituent particles is reduced by peptisation. Some tarry material resulting from firing may have further contributed to produce the shining polish. Easy removal of the coating brings home the idea that the vessels of this ware might have been subjected to double firing[2]. As regards the composition of the lustrous polish on the N.B.P. Ware the Chemist's reports are as follows[3]:-

(a) The black coating contains about 13 per cent ferrous oxide which is responsible for the black shade. The original slip was evidently a highly ferruginous body (possibly consisting of a finely levigated mixture of clay and red ochere) ground in water and applied to the surface of the vessel before it was fixed. The black colour was doubtlessly developed by the action of reducing gases formed in the kiln. The polishing might have been done before or after the firing. The coating is not a siliceous glaze.

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1. Ancient India, Ibid. p.58. See also J.S. Nigam, op.cit. p.39.
2. G.A.N. Richter, Jour. British School at Athens,XLVI(1951), pp. 143-50. To achieve the 'glaze' vessels in Athens were 'successively fired under oxidizing, reducing and re-oxidizing conditions.'
3. Cf. Ancient India, op.cit. p.58.

(b) The black polished film has been analysed with the following results :-

Silica, 46.55%; ferrous oxide, 25.20%, alumina, 15.53%; lime, 4.74%; magnesia, 3.43%; water (110 C.), 3.45%; alkalies not determined.

N.B.P. Ware sherds from Tripuri were also spectographically analysed[1] to supplement the previous report. The fragments from Tripuri have greyish or black original surface. Pieces from Maheswar show that the original surface of the ware is reddish. Usually, the core is grey, but in some cases it varies. These variations may be due to firing.[2]

(v) Black-and-Red Ware:

In the second-third century B.C. we come across a type of ware which is popularly called Black-and-Red Ware. This ware, which is black inside and red on the outer bottom, takes this appearance because of the technique of inverted firing. The clay, used for this ware is impure and is normally ill-fired. The fine levigated clay and the fine finish of the Painted Grey Ware and the N.B.P. are totally absent.[3]

(vi) Megalithic Ware:

Contemporary to the Black-and-Red ware is the Megalithic Black-and-Red Ware.[4] This Ware is found in association with grave

1. M.D. Dikshit, Tripuri - 1952, Appendix II, pp.136 - 39.
2. Ancient India, op.cit. p.27.
3. Z.D. Ansari, op.cit. pp.8-15.
4. Ibid, p.15. See also A. Lucas, Jour. Anthropological Inst. LIX, (1929), pp.121-129; K.R. Srinivasan and N.R. Banerjee, "Survey of South Indian Megaliths", Ancient India No.9, 1953, pp.109-110 and Ancient India, No.12, 1956, p.25.

goods in the Megalithic burials and urn-fields of South India. This ware is a fine product, as it has a uniformly thin side and is wheel-made and polished. Inspite of having thin sides, the ware is brittle and seems to have been fired at a low temperature. The Black-and-Red effect is due to the process of inverted firing. It is kept inverted during firing and as a result it turns black at the places of direct contact with the fire, viz. the inner surface and the exterior edge around the rim, while the rest of the exterior surface turns red. This ware varies from coarse to medium in texture, and is treated with a slip. It is also sometimes slat-glazed to present a shining though crackled appearance.

(vii) Indo-Roman Wares:

Round about the beginning of the Christian era, India developed extensive trade contacts with the western world. The results of these are reflected in pottery. Indo-Roman Wares include many fabrics. For example, mention may be made of handled jars or Amphora, Roulletted, Arretine and Red-Polished Wares. The Amphora was a four-feet high storage jar made of heavy and compact clay, and well-fired. The Roulletted Ware is a fine black-slipped and burnished ware with a decorated pattern on the inner bottom, drawing by a machine-like contrivance called a roulette. This ware has a remarkably smooth surface, is thin, brittle and well-burnt, and has an almost metallic ring. The ware appears to have been potted on a quick wheel from a fine well-levigated clay which burned grey or, more often, greyish pink, the grey colour being due to the reducing condition under which the pot was fired. Before firing,

it was usually treated inside and outside with a slip which, on being subjected to an inverted firing, turned black inside and showed variegated shades of grey, black, yellow or brown outside. Occasionally, both faces are covered with black slip and rarely with brown.[1] The Arretine Ware is a red-glazed ware, the glaze varying from a sealing-wax colour through 'Indian Red' to something approaching a deep orange-red. This ware belongs to a class of ware known as terra sigillata ('stamped pottery') from the fact that some of it is decorated by being pressed into a stamped mould. Terra sigillata belongs in orign to the eastern Mediterranean area, especially to the environs of the Aegean Sea.[2] The Red Polished pottery is remarkable for its treatment of surface and purity of clay. The outer surface bears a bright red slip which is highly brunished. The clay is fine and completely fired. The technical peculiarity of this ware is that some parts were fashioned in moulds, as several pot-sherds show finger impressions. Sometimes, entire small pots were made in double mould and then joined.[3]

(viii) Andhra Ware:

A sophisticated type of pottery dating back from the middle of the first century A.D. has been found in a few Andhra sites including Brahmagiri and Chandrāvallī. This has acquired the name of

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1. Z.D. Ansari, op.cit. p.15. See also Ancient India, No.2, July, 1946, p.45 ff.
2. J.H. Iliffe, "Sigillata Wares in Near East", Quarterly of the Department of Antiquities in Palestine, VI (1938), p.4 ff. See also, R.E.M. Wheeler and Others, "Arikamedu", Ancient India, No.2, July, 1946, p.34 ff.
3. Z.D. Ansari, op.cit. p.15.

"Andhra" Ware owing to its occurrence in the Andhra country during the rule of the Sātavāhana kings.[1] This pottery is often decorated with varieties of simple rectilinear or slightly curviliner patterns in a paste of kaolin or lime under a wash of russet-coloured ochere.[2] The Archaeological Chemist notes as follows in regard to the technique of the Andhra Ware.3

The designs of these seem to have been executed by first applying a thin paste of kaoline or lime, producing white parallel or crossed bands, and then applying a wash of red-ochere. The red pigment shows a network of cracks under the microscope. This crackle or crazing indicates that the pots were probably salt-glazed. When the fuel has nearly burnt out and the pots are red hot, common salt is thrown into the kiln. In the intense heat the salt volatilizes and, by chemically reacting on the surface of the pots, produces the glaze. The glazing effect is, therefore, superficial. With the exception of iron, no colouring - material is present. Lead, phosphate, etc., which are the usual constituents of glaze, are absent.

(ix) Decorated Pottery:
(200 B.C. to 650 A.D.)

During the Śuṅga, Kushāṇa and Gupta periods decorated pottery played an important role in the ceramic industry of India.

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1. Ancient India, No.9, 1953, p.166.
2. R.E.M. Wheeler, "Brahmagiri and Chandrāvallī, 1947 : Megalithic and Other Cultures in the Chitaldrug District, Mysore State." Ancient India, No.4, July 1947 - January 1948, p.236 ff.
3. Ibid. p.237.

A careful examination of the decorated pottery of a few important sites of North India[1], would show that the pot on which the paintings were to be executed, was completely dried in the sun, under shady place. Then it was treated with a wash or slip, burnished as desired or even without such application the paintings could be executed with a brush using black or any other pigment. The pot could be painted both before and after firing. Decorations other than paintings were made when the pot was in plastic state. Rouletting was generally done on the wheel by a tool known as roulette (a tool with a toothed disk for engraving rows of dots). The rows of dots or the patterns were made on the surface of the pot by running it over. Stamping, making incisions, moulding and applique designs were usually executed on the pot when it was off the wheel. Potter appeared his own stamps bearing different designs and motifs. These stamps were seen in negative and when the pot was stamped, the positive impression appeared on it. Some powdered material like pounded clay, ash, mica or sand were also used to bring out clear impressions; otherwise, the stamp could not be detached without damaging it. The incisions and notches could be mad by any sharp or pointed instrument made of bone, wood or metal. In case of moulded designs of course, moulds had to be

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1. J.S. Nigam, "Decorated Pottery of North India (200 B.C. to 650 A.D.)", Marg., Vol.XIV, June, 1961, No.3, pp.47-54. See also Ancient India No.2, July, 1946, p.49 ff., No.5, January 1949, p.62 ff., No.9, 1953, pp.126, 136-139, 150-155 and Nos.10 and 11, 1954 and 1955, pp.14 and 63; Indian Archaeology - A Review 1954-55, pp. 14 and 23, 1955-56, pp.19 and 22, 1956-57, p.30, 1957-58, p.52 and 1959-60, p.51; L.A. Waddel, Report on the Exeavations at Pāṭaliputra, Calcutta, 1903 and K.G. Goswami, Excavations at Bāṅgarh, Calcutta, 1948.

prepared with the help of small stamps, design on the stamp being repeated as often as required. The mould was then fired and used in one or more pieces for impressing the design on the vessels. The original stamps were positive, i.e. in relief, the moulds were in negative, and the finished vase, again was in relief. The clay was turned on the wheel, then pressed into the mould with hand or thamping tool and the inner surface was then finished off with a still brush. The designs in appliqué were obtained by applying the same clay of which the pot was made and worked by fingers. Sometimes the stamped or moulded motifs could also be applied. All such decorations were to be executed before the pot had been dried.

(x) Glazed pottery:

From the middle of seventh to fourteenth century A.D. is a period which is not yet well-known, so far as the ceramic industry of India is concerned. The large use of metal vessels seems to have affected the potter's art. Except one or two distinct industries, the pottery as a whole shows a decadence in fabric and treatment of the surfaces. The clay now used was porous and the pots were generally plain red or grey to black. Made of coarse to medium-grained clay, the pottery of this time had an occasional mixture of mica with the clay or a superficial dusting with it over the body before firing gave the pots a welcome lustre. Painted pottery was also in vogue though not in a large scale. The excavations of Hastināpura[1] and Ahichchhatra[2] have proved beyond doubt

1. Ancient India, Nos.10 and 11, 1954 and 1955, pp.19-20.
2. Ibid. No.I (1946), p.51 ff.

that the pottery was also sometimes decorated with incised, stamped and applied patterns. But, except a few examples of such types, the bulk of pottery of this period shows a decadence in fabric.

The last important ceramic ware is the Glazed Ware[1] belonging to the late mediaeval period after about the fourteenth century A.D. This ware, which is considered as the deluxe ware of its time, was introduced by the Persian Muslims into India. The technique consisted of painted decorations and covered over by a coating of glass, which thus made the painting permanent and protected. The ware was generally of sandy fabric having white glazed surface and designs done in blue. Sometimes the design was under-glazed, and the ware was coated with a film of glaze, which, in some cases, also showed an additional silvery lustre. The designs were normally executed either in blue or chocolate brown picked out with white and sometimes also supplemented with green. It appears that the design was painted in the required colour directly on the 'bisque'.

The study of the technology of some of the important ceramic wares belonging to different periods starting from the Neolithic down to the late mediaeval period reveals the fact that most of the age-old techniques are still followed by the village potters of India. As for example, the manufacturing process of the storage jars (Rañjans), medium-size pots (Ghaḍā or Maṭkā), dishes (Thālis), Surāhis, cooking vessels (Hāndīs) and bowls (Kaṭorā or Vāṭi) has not varied from the most ancient historic times

1. Z.D. Ansari, Marg, Vol.XIV, op.cit. p.15. See also Indian Archaeology - A Review, 1953-54, p.7, 1955-56, pp.11 and 20, 1956-57, pp.18 and 28, 1957-58, pp.20, 24-25 and 1958-59, p.54 and Ancient India, No.9, 1953, p.126 and Nos. 10 and 11, 1954 and 1955, pp. 19-20 and 71.

till today. On examining the modern pottery, it may also he found that even some of the ancient shapes and forms such as egg-shaped storage-jars with tapering base, globular pots with rounded base, carinated hāndīs, dough-plates, bowls, lids, covers, etc. have survived to the present day.[1]

Apart from the ordinary wares mainly manufactured for the common folk, the contemporary Indian potters also manufacture some wares of distinction, which may be technically classified into four categories such as (a) Unglazed ware, (b) Black pottery, (c) Painted pottery and (d) Glazed pottery.[2]

(a) Unglazed Ware: This ware is made so thin that it is also known as kāgazi (paper pottery). In other instances, a design is moulded on the surface by the fingers prior to its being fired. Sometimes the patterns are cut on the pot when it revolves on the wheel or are imprinted from blocks kept for that purpose. Occasionally, a higher art is manifested when the designs are incised or carved on the half-dry surface.

To impart colour to the whole or portions of the surface, the vessels are coated with special clays or coloured earths such as ochere (geru), chalk or tale (ābrak). These take the place of the slip in glazed pottery, the material given beneath the fritt or glaze. The wash with special earths is thus an initial stage in the higher forms of the ceramic art. In fact, all that

1. Mainly based on personal observations. See also Z.D. Ansari, Marg Vol.XIV, op.cit. pp.15-17.
2. Sir George Watt, Indian Art at Delhi, 1903 (being the Official Catalogue of the Delhi Exhibition, 1902-1903), pp.80-97; R.J. Mehta, Handicrafts and Industrial Arts of India, 1960, p.82 ff; C.J. Hallifax, The Journal of Indian Art, Vol.V, 1894 and Muhammad Baqquir, "Islamic Pottery", Marg,Vol.XIV,op.cit.p.57 ff.

is missing from painted and stained pottery is the use of a flux such as borax, common salt or oxide of lead, with the paint. The heat employed in stained non-glazed pottery is also not sufficient to fuse the materials. Colour is thus imparted before the firing and is fixed by the firing without the formation of a glaze.

In the Bengal painted pottery, the red colour used is red lead, yellow is arsenic, green is a mixture of yellow arsenic and indigo and black is produced with lamp-black made from charred rice seeds. These colours are mixed with a mucilage prepared from tamarind seeds or the gum of the bael (Aegle marmelos) before application. After the colours have dried, the vessels are varnished with garjan wood oil, or with the white of a duck's egg. The large jars made in Bengal are generally either plain red or black in colour. Some of these are so finely polished that they appear to be glazed. But they are not. The gloss is produced by rubbing the surface of the pottery before baking with certain seeds or a gum-like juice, to produce a fine polish that remains glossy even after the article has been fired.

After being fired, unglazed pottery is often smeared with lac and other substances to make it impervious to fluids. The black and red pottery of Madura, for example, is smeared with a mucilaginous material obtained from a species of abulation, over the stained surface. In som places of the Punjab, a varnish consisting of biroza resin dissolved in turpentine and mustard oil is burned into the clay for cooking utensils like hāndis.

(b) Black Pottery: The colour of the pottery is produced by the confinement of the smoke during firing, and the addition of certain materials to the kiln that would produce considerable smoke. In some cases the articles are fired within a closed jar, which is placed within the kiln. Alongside with the articles some damp straw and cow-dung or oil-cake are placed. It is generally seen that before firing the pottery is polished and painted or washed with a special preparation called the kabis, which is comprised of yellow earth known as piāri mitti, of powdered mango bark and of sājji mitti, or crude carbonate of soda. It is used with all the finer qualities of unglazed pottery, the confined smoke of cow-during being the additional ingredient that imparts the black colour. In other parts of the country the place of the powdered mango bark is taken by other substances. In Madhya Pradesh, especially at Seoni, the bark of the tensā tree is used; the leaves of the bamboo and of the Vāsaka (Adhatoda Vasica) are also claimed to form a superior kind of kabis. A silvery-black colour is also obtained by the addition of tin and zinc, and the silvery ornamentation is done by rubbing an amalgam of mercury and tin into the incised lines of the design, engraved in the clay after surface baking.

(c) Painted Pottery: Of painted pottery, there may be said to be two kinds - painted before firing, and painted after firing. While the art of glazing was quite unknown, a high proficiency was often attained in colouring pottery.

Painted pottery is especially common in Bengal and is of two kinds : the Sakher Hāndi, in which the outside surface is decorated with ordinary paints of different colours, after the vessel has been fired; in the other, the unfired pottery is painted with bel-māṭi, a kind of earth and the colour burnt in.

(d) Glazed Pottery: Glazed pottery is also as common as unglazed wares. The materials, used in the manufacture of glazed pottery are quartz, glass, borax, gum and fuller's earth. These ingredients are pulverized to a fine powder and shifted through a wire-gauze sieve. This very fine powder is then placed in an earthen vessel and sufficient water added to produce a soft paste which is then worked up into a mass like kneaded flour. Moulds are used for making the articles, and these are filled with the above composition. The article when dry may be placed on a potter's wheel and outer surface made quite smooth. The vessel is now coated with the glazing solution consisting of glass (kānch) and stone, both reduced to a fine powder and mixed with wheat flour paste. Water is then added to make this into a thick liquid with which the vessels are painted and later on allowed to dry in the sun. Further ornamental designs are painted on the prepared surface with a brush. The decoration work being completed, the second and final coat of glaze is given. This coat of glaze consists of Sohāgā (a kind of borax), Sindur (vermillion) and kānch (glass). These ingredients are melted in a crucible, and then allowed to coal and solidify. Broken into small pieces, these are reduced to a fine powder. The latter, mixed with wheat flour paste, forms a thick

liquid and used as a final glaze. The vessels are now ready for the final baking in a hot kiln.

Glazed pottery is found to be decorated in many ways. Burhanpur glazed pottery is ornamented in rich brown colour with decorations in light yellow lines. Originally Khurja produced a peculiar style of pottery of its own, the pattern being raised by the use of slips into slight relief. It consisted of a warm orange brown or pale claret coloured field with slightly darker floral designs picked out in white and blue. Rampur was originally famous for its deep green-blue Surāhis in one uniform colour and without any pattern worked on them, though latter on the pottery was decorated with designs in very low relief. The Amroha pottery is thin and brittle, white in colour and ornamented in colours and with gold and silver leaf. The design is first traced on the vessel with wax and the metallic leaf pressed over it to make it adhere to the traced lines. The Aligarh pottery is ornamented with fruit and flower designs in relief, which are impressed in moulds and affixed to the surface of the pottery before baking. In the South, the ornamentation is entirely surface decoration, carried out in the plastic clay before the glaze is put on, and consists of various floral and other patterns.

Whatever may be the types of pottery produced by the traditional potters, the process followed by them is the same age-old process as followed by the village potters through the ages. Briefly the same is described below.[1]

1. Mainly based on the data collected in the field by the Social Studies Division, Office of the Registrar General, India, New Delhi. See also Survey Report No.70, All India Handicrafts Board, "Report on the Survey of Pottery Craft at Khanpur", New Delhi, 1965, pp.5-6.

A lump of clay is placed on the wheel head at the centre and the wheel is rotated by means of a stick in a pit in the rim. The lump of clay is then pressed after wetting the hands without allowing the clay to fly off, but along with the wheel (PL.XIX, Fig.3). Water is used for proper lubrication and the clay is squeezed to form a cone. For forming a cup like hollow in the clay, the clay is pressed with the thumb and the sides are raised by pressing between two hands. The cylinder becomes taller and the walls thinner and thinner. The walls will be shaped according to the shape of the vessel thrown. The pot when prepared, is removed from the wheel head after cutting it at the bottom with a thread or wire. Usually it is not possible to finish the work to perfection in the operation of throwing, especially the bottom vessel on the clay is too soft to handle. For proper finishing the piece must be turned over to get the bottom. The bottom is finished by cutting the superfluous clay with pointed knife or tool. The edge is clearly rounded off afterwards. The articles then prepared are latter fired in the kiln using fire wood as fuel.

As regards potter's wheel C.J. Hallifax[1] has given a beautiful description which is represented below.

"The wheel or chāk is used in 'throwing' or turning most kinds of pottery ware, though large vessels are subjected to considerable manipulation after leaving the wheel. In the case of very large articles, the chāk is not used at all, the moulding being done entirely by hand, and in the case of Surāhīs, Jhajhars,

1. "Pottery and Glass Industries of the Punjab", Journal of Indian Art, Vol.V, January, 1894, No.41, pp.35-42.

and Chillams, the wheel is used only to finish vessels prepared in moulds. Two descriptions of wheel are in use, viz., (1) a single wheel turned by hand and supported on a pivot placed upon the surface of the ground; and (2) a double wheel, which is fitted in a hole, 2 feet 6 inches or 3 feet deep, and is turned by the action of the feet. The simple wheel is called rām-chāk, and is that which is almost universally used in the Divisions of Delhi and Jullundur, the double wheel being found only in Delhi and the large towns, where it is used for the moulding of big vessels."

The diameter of the Bengali potter's wheel (chāk)[1] is usually more than 3 feet. In the centre is a solid disc of tamarind or some other hard wood, some 13 inches in diameter, to which the outer rim is joined by means of 4 wooden spokes, each of which is 6 inches in length. The outer rim, which is about 6 inches wide, is made of bamboo splints, bound with cane and covered with a thick plaster of clay mixed with jute-waste; the object of this rim is to act as a counter balance. The wheel is supported on an iron or wooden axis turning on a pivot fixed in the ground. This enables the wheel to revolve freely and reduce the friction to a minimum. The wheel is worked by hand or by means of a bamboo stick (lāṭhi) and revolves horizontally.

However, crude his wheel, however primitive his mode of work, the traditional Indian potter still continues to play a very vital part in the society. He does not seem to have battled with his medium, his material or shape. Even there has been no

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1. Mainly based on personal observations. See also T.N. Mukharji, "Pottery and Glassware of Bengal", Journal of India Art, Vol.VI, No.52, 1895, pp.99-102.

incentive for the traditional potter to adopt new styles of pottery, except that of mass production - where he would be content to be useful as a cog in the wheel - till the machine outcasts him, totally.

B. Techniques of Terracotta:

Next to pottery, the most important item of potter's craft is the manufacture of terracottas, which specially include human and animal figures, dolls and toys, and other utilitarian and decorative objects. Our survey of potter's craft shows that the art of pottery making started earlier than the art of terracotta making. The potters started practising this craft when the society was well-advanced, both in cultural and economical spheres.

The origin of the terracotta craft may be traced in the terracotta tradition of the peasant cultures of Kulli and Zhob. About the first half of the third millennium B.C. these cultures are known to have flourished respectively in North and South Baluchistan. According to many scholars the Harappan culture of the Indus Valley (circa. second half of the third millennium B.C.) bears close affinity with these cultures, and if we carefully examine the manufacturing process, style, line and form of the terracottas found at Kulli and Zhob, it is evident that the Harappan culture had significant contacts with the Kulli and Zhob cultures, and a sequence of plastic tradition may apparently be recognised.[1] It cannot be denied that the Harappan culture indicates a change from the isolated peasant communities to the large and highly organised

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1. S.K. Saraswati, A. Survey of Indian Sculpture, Calcutta, 1957, First edition, p.6 ff. See also Stuart Piggott, Prehistoric India, 1950, Chapter IV.

urban communities and from agricultural economy to a commercial economy, but the technique employed in the manufacture of the terracotta figurines and their dresses recall the one noticed on the Kulli and Zhob figurines with which the figurines of the Harappa culture may be said to have been closely related.[1]

The terracotta female figurines from the Kulli sites exemplify a primitive technique in clay modelling, the form being reduced to a simple description of the main volumes, corresponding to the principal parts of the body. The figurines were modelled entirely by hand by pinching up or pressing down the clay by thumb and fingers according to the needs of the form. Such features as the eyes, hair, navel, the breasts, etc. were fashioned by separate pellets or strips of clay applied to the modelled form. The faces were coarsely modelled and were characterised by extremely narrow foreheads. The ornaments were executed in separate strips and pellets, and then fixed at their appropriate positions. In no case, was the mouth was indicated. In the figurines of the peasant cultures, the hands were usually attached to the body, while in the Harappan figurines they were comparatively detached and either hanged down along the sides, or were spread out, or carried something with one or both the hands. In these respects, the Harappan figurines showed notable advancement in the technology of potter's craft. Another interesting point to be noted in this context is that, entirely modelled by hand in the process, the

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1. Sir John Marshall, Mohenjodaro and the Indus Civilisation, 1931, Vol.I, p.46 ff. See also E.J.H. Mackay, Further Exacavations at Mohenjodaro, 1937, 2 Vols. London, and M.S. Vats, Excavations at Harappan, 1940, 2 Vols.

figurines were all solidly built, except in the few bigger animal figurines which were known to have been worked over an inner core of straw. The straw was consumed in the firing leaving the inside hollow. The small masks appeared to have been pressed from moulds, as the thinness of the objects would indicate. After firing, the figurines as a rule, were covered with a red wash, light as well as deep, and sometimes with a deep and polished red slip that stood the weathering remarkably.[1]

During the Post-Harappan period terracotta finds are not rare, but their number appears to be comparatively less than those found during the Harappan period. So far as the technique is concerned, the Post-Harappan terracottas do not show any significant change either in their line and form or in their style and execution.

During the Maurya, Śuṅga, Kushāṇa, Gupta, Post-Gupta and mediaeval periods terracotta objects are found to have played a significant role in the material culture of the people. So far as the technology of the craft during the aforesaid periods is concerned, it is to be noted that though mould played an important part, hand-modelled terracottas were also in vogue side by side. The Maurya terracottas, which have been mostly found at Pāṭaliputra, the Maurya capital, Bulāndi Bāgh, Buxar and some other sites of Bihar appear to be characterised by remarkably individual traits in respect of physiognomy as well as expression. In spite of a frontal treatment, each represents a complete figure in the round. But for the faces which were pressed from the moulds, the figurines are

1. S.K. Saraswati, op.cit. pp.13-14. See also Stella Kramrisch, "Indian Terracottas", Journal of the Indian Society of Oriental Art, Vol.VII, 1939, pp.89-110.

modelled by the hand. The appliqué technique was also employed for delineating ornaments and head-dresses, and usually the form was burdened with them.[1]

Some scholars like A.K. Coomaraswamy[2] and Stella Kramrisch[3] classify some of the Indian terracottas as the "ageless" primitive type which was entirely made by the hand by means of such rough and ready devices as flattening and rounding the body, pinching up and pressing down soft clay according to the requirements of the form, and drawing the ends of the limbs into conical points - all done by the simple pressure of the fingers. Eyes, lips, ears, navel, hair, etc. were indicated either by mere scratches or incisions, or by strips and pellets separately fashioned and applied on the summarily modelled form. The appliqué technique was also employed for delineating ornaments and head-dresses. It is interesting to point out that terracotta figurines of this type are fashioned out by the rural people even in the present day.

Apart from the hand-made terracotta figurines of the "ageless" type, there was one "time-bound" series of terracottas which have been recovered from Takshaśilā (Taxila) in the Punjab, Mathurā, Śrāvastī, Ahichchhatrā, Kauśāmbī (Kosām), Bhiṭā and Rājghāṭ

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1. K.P. Jayaswal, "Terracottas Dug Out at Patna", Journal of the Indian Society of Oriental Art., Vol.III, 1935, p.126. See also S.K. Saraswati, op.cit. pp.104-107.

2. Archaic Indian Terracottas, IPEX, 1928. See also Marg, Vol.VI, No.2, 1952, pp.22-35 and Boston Bulletin, Vol.XXV, No.152, 1927, pp. 90-96.

3. "Indian Terracottas", Journal of the Indian Society of Oriental Art, op.cit. p.89. See also S.K. Saraswati, op.cit. p.100 and M.K. Pal, Catalogue of Folk Art in the Asutosh Museum, Part I, University of Calcutta, 1962, pp.1-5.

in Uttar Pradesh, Padmāvatī in Gwalior (Madhya Pradesh), Pāṭaliputra (Patna), Buxar and Vaiśālī (Basārh) in Bihar, and Tāmralipti (Tamluk), Mahāsthān and Bāngarh in Bengal. These terracottas appear to be characterised by remarkably individual traits in respect of modelling as well as of expression. The faces of the figurines of this series were impressed from moulds, with the hair, head-dress and even the ears separately made and added. The heads, thus fashioned, were affixed to the bodies modelled by the hand exactly in the process that we notice in figurines of the "ageless" type. The drapery and ornaments on the body are also applied. Such terracotta figurines were no doubt the characteristic of the Maurya period, but they are also known to have continued even in the Śuṅga period when moulded plaques became generally frequent.[1] It is very interesting to point out in this context that Indian potters of the present day still make clay images in this technique. The body is modelled by the hand, the ornaments are impressed from separate moulds and then applied, and the head, again, pressed from a mould and then affixed to the shoulders by means of a tenon.[2]

The terracottas with moulded face and modelled bodies are followed by miniature plaques, each bearing a figure or figures in relief, entirely produced from moulds and then touched up and finished before firing. Such plaques have come up from various ancient sites of India in a fairly abundant number, and a large

1. S.K. Saraswati, op.cit.pp.101-103. See also D.H.Gordon, "Early Indian Terracottas", Journal of the Indian Society of Oriental Art, Vol.XI, 1943, pp.136-186; Stella Karamrisch, op.cit. p. 106 and D.P. Ghosh, "Discoveries in Lower Gangetic Valley", Science and Culture, Vol.23, 1957, pp.284-289.

2. Based on personal observations in the field.

proportion of them may be placed in the Śuṅga-Kushāṇa period. The most prolific centres of such terracottas are Kauśāmbī (Kosām), Tāmralipta (Tamluk), Vaiśālī, (Basārh), Mathurā, Ahichchhatrā, Bhiṭā, Rājghāṭ, Bāngarh and Chandraketugarh.[1] It deserves special mention in this context that a few terracotta moulds have recently been recovered from the ancient sites of Tāmralipta[2] and Bāngarh[3]. These moulds, which belong to the Śuṅga-Kushāṇa period, are now preserved in the Asutosh Museum of Indian Art, Calcutta University (PL.XIX, Fig.4).

During the Gupta period a good number of mould-made terracotta objects have been recovered from various ancient sites in Āryāvarta. Among these mention should be made of Sahri Bahlol in the Punjab; Bikanir in Rajasthan; Mirpurkhās in Sind; Śrāvastī (Sāheth-Māheth), Kosām (Kauśāmbī), Bhitārgāon, Bhiṭā, Ahichchhatrā and Rājghāṭ in Uttar Pradesh; Basārh in Bihar; and Māhāsthān, Tamluk and Bāngarh in Bengal. Apart from the usual categories, terracotta now came to be employed in architectural decoration. With the introduction of structural practices in the field of architecture there began an increased activity in brick constructions, and the scope of terracotta art was naturally widened. Carved bricks and tiles, with vegetal, human and animal motifs have

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1. Ancient India, No.9, 1953, pp.117-168. See also S.K. Saraswati, Early Sculpture of Bengal, Calcutta, 1957 and A Survey of Indian Sculpture, op.cit. pp.107-116. Stella Kramrisch, Journal of the Indian Society of Oriental Art, op.cit. and Indian Sculpture, Calcutta, 1933.

2. P.C. Dasgupta. The Early Terracottas from Tāmralipta, reproduced from Indian Folk-Lore, 1958, p.24, fig.3.

3. K.G. Goswami, Excavations at Bāngarh, Calcutta University, 1948, pp.18-19. Vol.XX, Figs. 2 and 4.

come from Bikanir (Rajasthan), Mirpurkhās (Sind), Śrāvastī and Bhitārgāon (Uttar Pradesh), Mahāsthān (Bengal) and other places.[1] For the preparation of these decorative bricks and tiles, the techniques of carving and moulding appear to have been employed.

It has already been discussed that in ancient India most of the terracottas were to be made either by hand or by mould. But a significant technique was evolved during the Post-Gupta period when the terracottas were also made by means of a combined technique which involved simultaneous operation of the wheel, the mould and the hand.[2] Recent excavations carried out at the ancient site of Ahichchhatrā (Distt. Bareilly, Uttar Pradesh) have revealed a good number of hollow cylindrical terracottas which were apparently made on the wheel. As for example, mention may here be made of a headless male figure seated on a high cylindrical pedestal with the legs hanging down. The pedestal was wheel-turned and a base plate was added for the feet. On a wheel-turned hollow cylindrical base as high as the knees, the hollow bust was worked up and then the mould-made head was joined to it. Usually the head ends in a tenon which was inserted into the hollow bust; this can be seen through the tabular bust from the other end.[3] Similar terracotta figurines of the same date have also been discovered from the ancient site of Kāśīpur (Distt. Moradabad, Uttar Pradesh). These

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1. S.K. Saraswati, A Survey of Indian Sculpture, op.cit. pp.170-171. See also Ancient India, No.9, 1953, pp.117-168.

2. M.K. Pal, A Study of the Technology of Some of the Important Traditional Crafts in Ancient and Mediaeval India, Indian Publications, Calcutta, 1970, pp.13-14.

3. V.S. Agrawala, "Terracotta Figurines of Ahichchhatrā, Distt. Bareilly, U.P." Ancient India, No.4, 1948, pp.158-159 and 171-173, Plates LV, LVI and LXVII-A.

figurines are now in the reserve collection of the Archaelogical Survey of India at Safdarjung, New Delhi.[1] One of the specimens examined was a seated female figurine on a pedestal which was apparently made on the wheel. The pedestal bears distinctive wheel-marks both inside and outside. Terracotta examples made by this process were also recovered from the ancient sites of Tamluk (Tāmralipta) and Pānnā in the district of Midnapore, West Bengal. These terracottas (lizard-headed mother and child figurines) stylistically dated in the early mediaeval period are now preserved in the Asutosh Museum of Indian Art, Calcutta University.[2] On a careful examination it is found that the body of these figurines was made on the wheel, while the ornaments on the body, the hands, the creeping offsprings and the head were modelled by hand and then fixed in the appliqué technique (PL.XX, Fig.1). In the manufacturing process of these terracotta figurines, wheel and hand played a significant role. Even the heads of these figurines were modelled by hand and not by mould. This shows a clear distinction between the techniques followed by the potters of Kāśīpur and Ahichchhatrā, and the potters of Tamluk and Pānnā. The former used mould for the preparation of the head, while the latter applied hands for the same purpose.

It is very interesting to point out in this connection that the potters of Darbhanga, Bihar still manufacture terracotta horse or elephant-riders in this combined technique.[3] The operations

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1. Based on personal observations.
2. Ibid.
3. Mainly based on the data collected in the field in 1967.

involved in the technique of manufacture of a terracotta horse-rider are described below :-

Processing on the Wheel:

Legs: The legs of the horse are made on the wheel in the forms of a hollow cylindrical shapes (PL.XX,Fig.2). When the cylindrically shaped legs are dried up a little, they are again cut into two longitudinal halves with the help of a bamboo spatula ('Chonni'). After the cylinders are thus cut into two longitudinal halves, the two halves are not, however, immediately removed from one another. They are allowed to completely dry remaining in vertical position. Afterwards the two halves are removed from one another.

Body: The body of the horse is processed on the wheel in oblong shape. It looks like a cylindrical test tube. On the dorsal end there is one opening where the neck is fitted.

Neck: The neck is also shaped like a hollow cylinder. From its posterior end which fits on the body, the diameter gradually narrows down towards the anterior end. The anterior end has an opening where the head is fitted.

Head: The head including the face is shaped on wheel. It is given a miniature dome shape. After the basic form is obtained on wheel, more clay is added to the anterior end, and the slanting snout is obtained by

pressing with palm and deft manipulation of the fingers. In some types the head is shaped with the help of moulds (sānchās). The ears on the head are modelled by hand and fitted in upright position at the top of the head.

Horse-rider: The body of the horse-rider is shaped on wheel in cylindrical shape. The posterior part is fitted on the body of the horse.

Processing the head of the horse-rider on mould (sānchā):

The head is made in two moulds - one for the front portion and the other for the back portion. After the two portions have been separately shaped on moulds, they are joined together.

Modelling of hands and legs of the horse-rider, ears and strappings of the horse:

The work of modelling is done by pressing or rolling the clay on the wooden plank with the palm and the fingers. Only the strappings are made by flattening the clay on the wooden plank in the forms of discs, and then cut into desired shapes.

Joining of different parts:

The different parts are joined when they are in semi-dried condition (PL.XX, Fig.3). First the body of the horse is joined to the legs, and then the neck is joined to the body. Then the head of the horse is fitted to the neck. The body of the horse-rider with legs and hands is then fitted to the body of the horse. The head of the horse-rider is fitted to the body, only when the strappings, ears, reins, etc. are fixed on the body of the horse (PL.XX, Fig.4). The joining of each part is done by well-kneaded soft clay and water.

Making of floral motifs and other decorative designs on mould:

The floral motifs and other decorative designs on the body of the horse are made on mould separately and then attached to the body in the applique technique.

Sun-drying:

After the horse along with the rider has been completely shaped, it is kept upright on the ground for sun-drying.

Fire-baking:

After the sun-drying is over, comes the stage of fire-baking. Fire-baking generally takes place in an open space kept clear for the purpose near the workshop.

Colouring:

After the fire-baking is over, the object is painted with different colours such as black, red, yellow, green, blue, etc. on white ground (PL.XXI, Fig.1).

During the mediaeval period, the importance of terracotta craft probably declined due to large-scale productions in stone, bronze and copper. Terracottas made by the same age-old process, i.e. by hand or on mould were not rare, but they do not appear to have been widely used as seen in the preceding periods. The only significant use of the craft was in architectural decoractions made of carved bricks and tiles. As mentioned before, the use of terracottas in architectural decoration started during the Gupta period. The tradition continued throughout the mediaeval period, and even today it is prevalent in many parts of the country.

Now-a-days, the traditional Indian potters manufacture terracottas in the same age-old techniques as followed by the

potters of different ages. The technique of making terracottas in the combined process, i.e., by means of simultaneous operation of the wheel, the mould and the hand has already been described while making a survey of the technology of terracotta craft in the post-Gupta period. Now the techniques of mould-make terricotta toys and figurines, and the techniques of temple terracottas as followed by the present-day potters are described below :

Techniques of mould-made terracotta toys and figurines; [1]

Most of the mould-made terracotta toys and figurines are processed on two moulds (PL.XXI, Fig.2). For this purpose a lump of clay is first well-kneaded, and then it is placed on a wooden plank and flattened into a sheet by beating with a dabbar. The sheet is then cut into the size of the mould itself and pressed against the inner wall of the mould with finger. The mould is in two pieces. After the inner walls of both the pieces of the mould are covered with clay, their side margins are also covered with clay and moistened with water. Then both the pieces are brought together and pressed against one another. They are kept pressed in upright position for sometime till the clay layers on the side margins of the two pieces adhere to one another. After that the two pieces of the moulds are removed (PL.XXI, Fig.3). After sun-drying, the object is baked in fire. After fire-baking, the object is either left unpainted or pained with different colours.

Techniques of temple terracottas[2]:

The method and technique of execution of temple terracotta

1. Mainly based on personal observations in the field.
2. Prodosh Dasgupta, Temple Terracotta of Bengal, ed.by Ajit Mookerjee, Crafts Museum, New Delhi, 1971, pp.39-42. See also Mukul Dey, Birbhum Terracottas, New Delhi, Lalit Kala Akademi, and O.C. Gangoly, Indian Terracotta Art, Calcutta, 1959.

plaques and panels is quite interesting. After the clay is prepared to the required consistency by a process of kneading and making it soft and free of any lump and flattened into the shape of tiles to the required size and thickness, the design already drawn on a piece of paper is transferred by tracing it on the face of the plaque or panel when it has somewhat dried, but still soft enough for the drawing to be inscribed. After this is done, the plaques are further dried again in the sun to bring to a stage when the potter can start scopping and taking out the unwanted portion along the exterior side of the drawing or of the design with the help of a sharp knife-like instrument, either made of steel, wood or bamboo so that the picture or design is thrown above the background. The artisan thereafter starts modelling the figures according to the requirement of degree of depth, etc., but never adding any bit of clay on it. Thus, when the plaque is executed finally in clay before baking stage, the figures of the plaque never go beyond the original surface of the border line of the plaque or panel.

The technique of eliminating the unwanted portion of the plaque or panel is very much akin to the technique that is used in carving either in stone or wood. The only difference is that in the case of a clay plaque no hammer is used in the manner of attacking the substance, whereas while working on wood or stone or any other hard material, the hammer is used for attacking the substance.

There are various kinds of decorative motifs mostly bordering the terracotta plaques and panels. It has been often remarked that all these plaques and panels are first executed in clay, and

then out of them negative moulds are prepared in order to get replicas. Such decorative plaques joined together in a row form the border of the main plaques and panels, and actually serve the purpose of framing a picture. These decorative plaques are often repeated suitably wherever they are needed and for this alone casting from mould becomes necessary in order to avoid unnecessary waste of time and energy.

For the preparation of these negative moulds out of which the replicas are made, the craftsmen have to first prepare the original in clay and then dry it in the sun. When it is sufficiently hard, a fine layer of brick dust is evenly sprinkled over the design and soft clay rolls gently pressed on it. Finally, when the pressed clay becomes little dry, it is taken out of the original piece having thus registered a negative design into the mould. The thin layer of brick dust allows the negative mould to come out easily from the original design. After drying in the sun it is baked in fire in order to harden the mould sufficiently so that a considerable number of reproduction is possible from it.

The process of firing or baking the terracotta plaques and panels is the same as followed in earlier times. They are fired in the kiln made of clay with proper arrangements for air vents, etc., to let the smoke breathe out so that the colour of the plaques is not disturbed. The smoke has the quality of creating a dark patina over the objects when in contact with them over a long time. It is essential, therefore, to keep out the smoke in order to get the pure terracotta colour to the desired effect of

brick red. The firing has to undergo a slow process allowing more time for the heat to get slowly absorbed in the object.

The survey of the technology of terracotta craft reveals the fact that most of the techniques have not only persisted in all ages of Indian history, but also appear to have survived even up to the present day.

2. Techniques of Stone-carving:

A careful study of the ancient Indian stone images preserved in some of the important archaeological museums of the country shows that for the manufacture of stone carvings, mainly chisel and hammer were used. Different divisions of the image to be carved were, first of all, marked in proper proportions. These markings were then further deepened with the hammer and the chisel. Subsequently, with the help of flat chisel the carving was done within the marked portions of the desired figures. This traditional method of carving is still found to be followed by almost all the stone-carvers of India.

In Kerala[1], the only tools used by the craftsmen are burin and hammer. The burin is held in the left hand and the hammer in the right hand. The designs are worked by striking the hammer on the burin. For the production of idols, mainly granite is used. The piece of rock is taken out according to the required measurement. The craftsman determines the measurements of the various parts of the body of the idol on the basis of Silparatna and works the idol. The figure is carved by using a burin and hammer. The surface is smoothened by the help of a file. Equal quantity of

1. M.K. Devassy (ed.), Census of India 1961, Vol.VII, Kerala, Part VII-A, Selected Crafts of Kerala, 1964, p.196.

sealing wax and steel powder are mixed together and melted after adding a little water. The image is rubbed by this saturated solution to make it smoother.

In Bihar[1], the basic technique of stone-image making is also the same as found in Kerala. For the manufacture of stone image, the first thing to be done is that a measure is taken of the size of the figure that is to be manufactured from the particular stone slab. When the size is determined, the stone slab is beaten with a hammer for removing the edges which are not required. Next, the stone slab is made to size on all sides with the help of the hammer and the chisel. After stone slab is made to size, the upper and the lower surfaces are levelled with the hammer and the chisel. Next, with the help of the divider different divisions of the figure such as the face, chest, palms, feet, arms, nose, ears, etc. are marked in proper proportions. These light markings made by the divider are further deepened with the hammer and the chisel (Chheni). Subsequently, with the help of flat chisel the carving is done within the marked portions of the desired figure. When the carving is done, all the sides are further smoothened with chisel and hammer.

The next important stage in the production of a stone image consists of polishing. There are two methods of polishing an article, the traditional and the modern. According to the traditional method, polishing is done with sand. The inner and outer surfaces of the image are rubbed with coarse sand. Fine sand is

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1. Mainly based on personal observations in the field. See also S.D. Prasad (ed.), Census of India, 1961, Vol.IV, Part VII-A, No.1, "Stone Ware Craft of Patharkatti Village", 1969, pp. 20-22.

then used for producing greater smoothness. Subsequent stages of polishing are also undertaken to produce progressively greater smoothness and shine. For these stages the artisans prepare the polishing stone at home from different stone particles of various textures such as coarse, large, medium-fine and fine, which are mixed with lac and heated. The mixture on solidifying is made into rectangular pieces or sticks. Different types of sticks are used for different types of polishing. In the end, black pigment mixed with oil is applied on the article and finally rubbed with wax to give a shine.

The modern method of polishing is by using carborundum pieces which are usually available in the form of sticks. The use of carborundum precludes the utilization of indigenously manufactured polishing stones made of lac and different types of stone particles.

The basic technique of stone-image-making as followed by the stone-carvers of Shivarapatna[1], Distt. Kolar, Mysore is also the same as found in Bihar and Kerala. After the stone slab is made to size on all sides with the help of the hammer and the chisel, the rough outlines of the figure to be carved are marked with charcoal in proper proportions. Subsequently, with the help of different types of chisels the carving is done within the marked portions of the desired figure. While carving the figure, the chisel is invariably held in the left hand. When the craftsman wants to put the point of the chisel to the spot of the figure to be carved,

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1. Mainly based on the data collected in the field by the Social Studies Division, Office of the Registrar General, India, New Delhi in 1963.

revealing the rough figure of the image. In the third stage, the artisan proceeds to eliminate the superflous stone and carves out a crude figure of the image. The fourth and successive stages of chiselling are meant for smoothening the surface of the stone, and refining the crude figure. The artisan refines part by part of the image and he generally proceeds from head to foot. After the refinement, the final touches are given to the image with delicate chiselling with sharp edged chisels. The image is then polished with sand paper and rubbed with oil.

The technique of carving out curvilinear designs and decorative motifs of concentric circles on the stone wares is also practised in a good number of stone-carving centres in the country[1]. The curvilinear designs are engraved with the to and fro movements of the chisels with skillful manipulations, when the country lathe with the affixed ware rotates. The revolution of the ware makes the seratchings curvilinear. Again, the clock-wise and anti-clockwise revolutions of the ware change the direction of the curves in two opposite angles in the curvilinear designs. The decorative motifs of concentric circles are engraved on the wares with a typical chisel held in a slanting position against the ware revolving on the lathe. The rod of the chisel, pressed in between the thumb and the folded fore-finger, rests on the inverted tripod. The concentric circles are effected by placing the chisel at different distances from the centre.

The basic techniques involved in the manufacturing process of stone-carving in ancient and modern India appear to be more or

1. Mainly based on personal observations in the filed. See also S. Sinha (ed.) Census of India, 1961, West Bengal and Sikkim, Vol.XVI, Part VII-A(iii), Handicrafts Survey Monograph on "Stone Wares", 1967, pp.82-101.

less typical and conservative, though the present-day stone-carvers have the usual tendency to introduce sophisticated ideas in their technical skill, artistic expression and aesthetic appraisal.

3. Techniques of Wood-carving:

The techniques of wood-carving have been practised in India since very ancient times. In constructing palaces, temples and houses wood was the main raw material used. As these were mostly constructed in perishable wood, little remains to speak of its antiquity more clearly. A careful examination of the stone carvings of the ancient period, however, shows that the technique of wood-carving was later on transformed into the stone-work technique. Those craftsmen who handled wood changing to stone found it difficult to forget completely their old style.

The technique of wood-carving also finds mention in the ancient literary texts. The wood-carver is seen playing his trade with the hatchet, the adze, the chisel and the mallet (Vāsipharasū-nikhādananūggare) and the measuring line[1], which he draws out at length or winds up short[2] or which he puts round a log of wood with black dust to guide his saw (tacchako kāla-suttam anulometvā rukkhaṁ tacchati)[3]. He bends a log of wood (dārun namayanti tacchakā[4]) and discarding soft parts of the wood takes the hard parts (pheggum apaharittā sāram ādiyati[5]) as obviously in the case of ebony of which the outside is soft and inside hard. Pāṇini also refers to tanukarana or hewing as the chief part of the carpenters'

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1. Kālasutta Jātaka, II.405 and IV. 344.
2. Dīghanikāya, XXII. 2.
3. Milindapañho 413.
4. Dhammapada 145.
5. Milindapañho, op.cit.

work[1]. Amongst his tools reference is made to Udghana[2], the bench on which he works.

An idea of the ancient method of wood-carving may also be had from the oldest known remains of Indian wood works found in the framing at the entrance to one of the big Chaityas at Kārli. The pillars obviously executed by means of different types of chisels, are quite plain like those of the earliest caves, while the capitals or brackets are shaped into pendent lotus and tasselled forms, often massed one above the other, and sometimes provided with lateral struts carved as figures of horsemen or elephants[3]. Another specimen of ancient wood-carving made by chisels has been found at Arikamedu near Pondicherry in South-East India[4]. The specimen belonging to late first century B.C. or early first century A.D. appears to have been fashioned from a block of wood with its central portion scooped out. The specimen resembling a cumbrous shuttle, possibly represents a toy-boat.

In olden times much of the carving seems to have been done by free hand assisted by rough outlines drawn on wood. Even a stencil would only give the outlines, while relief carving as well as low and deep undercutting used to depend on the skill of the worker. The craftsman translated the shape in his imagination into perfect form in wood with extraordinary deftness. Moreover, before starting his work, he had in his mind clear perception or image of the final shape of the article.

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1. III. 1.76.
2. III. 3.80.
3. A.K. Coomaraswamy, The Arts and Crafts of India and Ceylon, 1913, Chapter VI, pp.163-164.
4. Wheeller, Ghosh and K.Deva, "Arikamedu: An Indo-Roman Trading-Station on the East Coast of India", Ancient India, No.2, July 1946, p.104, fig.44.1.

The techniques of wood-carving as practised by the present day wood-carvers of India are mainly traditional, though there are some negligible variations in both materials and techniques in many wood-carving centres in the country. A consolidated account of the techniques as followed by the craftsmen of a few important centres is presented below[1]:

Now-a-days the piece of wood on which carving is to be done is first cut off in required size from the log and given proper shape. For this purpose, straight lines are marked with the help of a string dipped in chalk or red ochere (geru). The piece is carefully trimmed with the adze to give the desired shape.

After drawing the outline on a selected log of wood, the superfluous portion is first taken out to give it a rough shape. The real technique and skill, however, lie in the subsequent operations, which require on the part of the carver true knowledge of forms and correct use of tools which would enable him to deftly take out the unwanted portion by means of gauges and chisels of different sizes with the manipulation of strokes through the movement of hand. Starting with broad outlines, the artisan proceeds from simple to intricate carvings. Beginning with large tools, he progressively uses finer chisels, smoothening surfaces, carving veins, giving light and shade, curves, relief, chipping off spaces in the recesses or decorating the background. The

1. Mainly based on the personal observations in the field. See also R.K. Trivedi (ed.) Census of India 1961, Vol.V, Part VII-A(2), "Wood Carving of Gujarat", pp.28-32; M.K. Devassy (ed.) Census of India, 1961, Vol.VII, Kerala, Part VII-A "Selected Crafts of Kerala", 1964, pp.178-180; Handicrafts Survey Report No.36, "Wood-Carving Industry, Srinagar", published by the All India Handicrafts Board, New Delhi, 1965, pp.6-7 and T.M. Abraham, Handicrafts in India, 1964, New Delhi, pp.62-72.

chisel in hand, lightly held and freely manipulated by the fingers, is tapped by the mallet with repeated strokes, light or heavy according to necessity. Thus the craftsman works from low to moderate and moderate to high relief and carries out low or deep undercutting as required by means of very simple tools. In most cases the finishing is done by innumerable patient strokes of finer chisels. For smoothening roughages indigenous files are used. On bold carving work dry coconut husk is also rubbed.

Of the tools utilised by the wood-carvers for minute details, special mention may here be made of chisels and gauges of various sizes and shapes ranging from the point of a needle to three-fourths of an inch. They also vary in number according to the extent of artistic ability of the craftsmen, the nature of carving and the quality of wood on which they work. Different sizes of chisels are also used for different purposes. The largest size which has a breadth of about 6 inches at the edge is generally used for levelling flat surfaces before the plane is applied for smoothening. Chisels of smaller size of 4 inches, 3 inches, 2 inches, half-an-inch, etc. in width are used for different purposes like rounding the edges, cutting timber into pieces, making holes and for other odd purposes.

For preliminary work like cutting and preparing pieces of wood to be carved, the artisan, who is also skilled in simple carpentry, uses the common tools like hand-saw, adze, plane, chisel and drilling equipments. Other small instruments include a centre-bit, screw-driver, a hammer, a foot-rule and a hone for sharpening chisels. But main dependence of the carver is on a large number of small handleless chisels, guages and punches of various sizes

and shapes worked with the help of a mallet of wood used to strike the chisel. It may be noted here that in the production of wooden models ordinary tools are used by the craftsmen. It is only when the finer items of work like the carvings of the eyes, ears, nose, lips, locks, etc. of a statue are done, the sharper and more tiny tools specially suited for carving are used.

The tools used in sandal wood-carving mainly consist of a saw, a plane, a mallet, a hone and a chisel. The saw is an ordinary hand-saw used for cutting the log into planks in the required size. The plane is used for smoothening the surface of the plank to be operated upon and for planning cornice or moulding. The mallet is a strip of wood having about 9" to 21" in length. The hone is a rough slate of finely grained hard stone with one face rubbed down used for sharpening tools. The chisel is the instrument used for carving which is in many forms employed according to the nature of carving. One is called firmer, a flat instrument curved or screw edged. The screw edged firmer is to work out sharp corners. Another is hollow chisel of varying size and curvature of edge and the other is engraver. These tools are generally made by the local craftsmen. Some of them are very delicate and minute, designed to work out extremely delicate and slender figures.

The tools needed for carving of walnut wood articles are not many, nor are they elaborate. For shaping and carving articles, a carver generally needs assortment of both carving and ordinary carpentary tools which include straight and curved chisels, a plane and a hand-saw. Besides these tools various other elaborate

carpentry tools and equipments such as lathe, freight saw, drilling machines, etc. are also used by the carvers.

Sandal wood-carving:

The method of sandal wood-carving is more or less the same everywhere. The suitable quality of sandal wood is selected and cut conveniently into slabs or planks of the size and thickness required. The carver gets on to plane and joins together and thus builds his cabinets, caskets or glove boxes. Then he takes parts to pieces and proceeds to inscribe the design on the wood with an engraver and begins to outline the designs in all details. Between the outlines of pattern, cutting is made which is technically known as bosting. By this the engraver gets a rough model of the subject, which he intends to execute. With meticulous precision and accuracy, he goes over the work a number of times. The detail of shape, curve, light and shade, bold relief and deep under cutting, the minute details and the characteristic fineness of the work are all effected by tiniest tools.

Statue-making:

In the process of statue-making, the design for a statue is generally taken from photos or paintings. When the size of the figure is determined, a suitable piece of dry wood is cut out by means of a hand-saw. A sketch of the figure to be curved is then drawn in pencil on the wood. Along this outline the figure is shaped by a chisel which is usually held in the left hand and is driven with a mallet in the right hand. When a rough figure is shaped like this, a finer variety of chisel with thinner and narrow

cutting edge is used in the same manner for carving the details of the figure (PL.XXII, Fig.2). The rough surface is then smoothened by rubbing it with sand-paper. A small quantity of chalk powder and varnish is now mixed so as to make it a paste. This paste is smeared on the statue for filling up the holes or uneven surfaces. The sand-paper is once again applied, and the figure is then given an oil or varnish paint. In some cases natural colour is generally retained on the article. For imparting 'natural colour-shine' agate stone is used and rubbed over the article.

Toy-making:

The toy-making does not command much technical skill when compared to the carving of statues. The craftsmen generally go in for planks of mango wood to be used as the raw material. The surface of the plank is further levelled by pushing a plane forward and backward. When the plank is sufficiently levelled, the figure to be made is drawn on it with pencil. It is then cut along the outline either by a fret-saw or hand-saw. Sometimes the parts are made spparately and fitted by fixing nails. Finally, the figure is smoothened with sand-paper and suitably painted.

The designs of wood-carving may vary from region to region each having a distinct pattern of its own, but the manufacturing process and the tools used are basically traditional, and more or less the same everywhere.

4. Techniques of Ivory-carving:

In ancient India, chisel and saw appear to have played an important role in the manufacturing process of ivory-carving. The

cylindrical gamesman found at Harappa[1] bears concentric circlets which were obviously incised by fine chisels. Combs decorated with incised or double-incised concentric circles have been found both at Harappa[2] and Mohenjadaro[3]. According to Mackay, the teeth were cut with a saw whose blade appears to have been 0.02 inch thick. Lathes were also used for ivory-carving as indicated by the smooth surface and rounded ends of some of the ivory batons found at Mohenjodaro[4]. The criss-cross designs on the fish-shaped ivory-pieces could have been obtained by a thin chisel and by a skilled and steady hand only[5]. The ivory-workers also used tubular drills for making circular markings upon the dice[6]. The regularity with which the designs are executed on these pieces show the height of technical achivement of the Harappan ivory-workers.

Another example of the Harappan ivory-carver's achievement can be seen in a piece which could either be the base portion or top of a vase.[7] It has a geometrical design of a circular motif in low relief, each circle made of three petals round the projecting piece. The petals show traces of light red pigment with which they were inlaid and the contrast of this colour with the creamy surface of the ivory must have been very pleasing. Such refined design and colour-contrast clearly show that the artist was quite at home with ivory carving. In fact it was such a commonly used material that even model shrines were being made of it.[8]

1. M.S. Vats, Excavations at Harappa, 1940, Vol.I, p.461 and Vol.II, PL.CXIX, No.55.
2. Ibid, p.459 and Vol.II, PL.CXIX, No.6.
3. E.J.H. Mackay, Further Excavations at Mohenjodaro, New Delhi, 1938, Vol.I, p.542.
4. Ibid. pp. 432-33.
5. Ibid. p.557.
6. Ibid. p.556.
7. Ibid. p.324.
8. Ibid. pp.564-65.

The technique of making designs by incision appears to have been carried out in the latter ages also. The ivory pendant representing female figurine from Rupar[1] (60 miles north of Ambala), the ivory female figurine, the ivory hair comb and the ivory ear-real from Taxila[2] (20 miles north-west of Rawalpindi) datable between circa 600 and 200 B.C. are decorated with incised circles. It is interesting to note in this context that ivory figurines of Mother Goddess decorated with punched circles have been recovered from Prabhāspāṭan[3] (Distt. Sorath) and Ujjain[4] (Distt. Ujjain). These figurines datable in the Maurya period, clearly indicate that the technique of making designs and motifs by punching was also followed side by side.

During the Śaka-Parthian period, the ivory objects appear to have been made on the lathe, and decorated with mouldings, incised lines and hatching. As for example, mention may be made here of the mirror-handle recovered from Taxila[5] which is evidently made by this technique.

The ivory bands and decorated plaques including panels recovered from Begram[6] (the ancient Kapiśa, Mod. Kafiristan) also throw significant light on the techniques of ivory carving in the

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1. Ancient India, No.9, 1953, fig.4, No.9.
2. Ibid. fig.8, No.5; Sir John Marshall, Taxila, Vol.II, 1951, pp. 653-656 and Vol.III, p.199, Nos.6 and 23.
3. Indian Archaeology 1956-57 - A Review, p.17, pl.XVIII-B.
4. Ibid. p.27, pl.XXXIII-A.
5. Sir John Marshall, Taxila, Vol.II, 1951, pp.658-59. See also Vol.III, pl.199, No.56.
6. Motichandra, "Ancient Indian Ivories", Prince of Wales Museum Bulletin, No.6, 1957-59, pp.31-36. See also J. Hackin and Others, Nauvellas Richarches Archaeologiques a Begram, 2 vols. Paris, 1954.

first century A.D. Besides the usual carving in the round or in high relief, the Begram artists used a technique in which figures were carved in depth; i.e., after the outline was drawn, the artist removed the material along the inner side of the outline to create a feeling of depth and thus to project the figure.[1] On certain bands, the decoration was engraved with a style. Certain variants in this method may also be seen. The undecorated zones were eliminated by scooping with the result that the decorated part came out in light relief. The transition from simple engraving with a style to flat relief by scooping and hollowing the non-decorated zones was represented in a piece. On some plaques the contour was lightly scooped and on this surface, the craftsman did the relief work resulting in "relief in reverse". This technique reached its perfection in the larger plaques. The deeply incised contour yielded a shading, which admirably gave the effect of modelling. The composite motifs on the borders gave an excellent example of this technique. In certain plaques, the classical formula of a very much accentuated relief as in wood work was followed. The plaques and bands also show traces of painting in which red pre-dominates. Black was used at times to accentuate the contours of the figures. The hair was painted black and so also the pupils of the eyes. No other colour seems to have been used.

An idea of the technique of ancient Indian ivory-carving is also available from a notable example of Buddha figure from

1. J. Auboyer, "Ancient Indian Ivories from Begram, Afghanistan", Jour. of the Indian Society of Oriental Art, Vol.XVI, p.36.

Kashmir[1](?). The figure stylistically belonging to the Gupta period was carved in deep relief. Traces of chisel marks on the reverse show that a piece of the required size was hewn and sawn out from the tusk, and then it was levelled.

Details of the technique of ivory-carving during the Post-Gupta and mediaeval periods may not be readily available, but a careful scrutiny of some of the notable examples of ivory-carving belonging to these periods shows that the craftsmen must have used different types of chisels, saw, styles and lathe in their manufacturing process. Painting of ivory objects with different colours specially with lac was also not uncommon.[2] The most significant advancement in the filed of technology of these periods was the introduction of inlay work on wood in ivory.[3] For this work, fine ivory sheets were supposed to be cut into pieces of different sizes, and then set into the appropriate portions cut on the wooden surface.

As regards the technique of ivory-carving in the late nineteenth century, references to different types of tools used by the craftsmen are made in the contemporary published sources.[4]

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1. Motichandra, Ibid. pp.38-44, pl.6.
2. Ibid, pp.30-34 and 45-46. See also M.K. Pal, Ivory Works in India Through the Ages, Census of India 1961, New Delhi, 1971, pp.26-29.
3. Duarte Bārbosā, Vol.I, pp.135-142. See also J.N. Chowdhuri, "Commerce and Industry in the Pre-Mughal Periods", Indian Historical Quarterly, Vol.XXIV, No.2, 1948, pp.127-128.
4. T.N. Mukherji, A Rough List of Indian Art Ware, Calcutta, 1883, p.6. See also G.C. Dutt, A Monograph on Ivory-Carving in Bengal, Calcutta, 1901, pp.3-10.

The tools used by the ivory-carvers are reported to be as follows :-

(i) files of various sizes,
(ii) knives,
(iii) steel styles,
(iv) saws,
(v) small chisels,
(vi) pilers,
(vii) screw-drivers,
(viii) awls of various sizes,
(ix) compasses,
(x) a vice,
(xi) wooden mallets,
(xii) AT square, and
(xiii) lathe.

The technique of ivory-carving as followed by the present day ivory-carvers is basically traditional, though there are some variations in both materials and techniques in different production centres. A consolidated account of the techniques as practised today in a few notable production centres in Eastern, Northern and Southern India is presented below:[1]

For the manufacture of an ivory figure the first thing to be done is that the carver would select a suitable piece of

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1. Mainly based on personal observations in the field. See also M.K. Devassy (ed.) Census of India, 1961, Vol.VII, Kerala, Part VII-A, Selected Crafts of Kerala, 1964, pp.138-139; Survey Reports published by the All India Handicrafts Board, New Delhi, Report Nos.35 (1965), pp.3-5, 42 (1965), p.6, 43 (1966), pp.3-4 and 68 (1965), pp.5-6. See also T.M. Abraham, Handicrafts in India, New Delhi, 1964, p.76.

elephant task according to size of the desired object. It has then to be cut into a block and shaped by cutting the circular edges length-wise with hand-saw and chisel as and when necessary. On this broad shape, the outlines of the figure to be carved are made by means of pencil sketches. A preliminary sketch of the figure may also be prepared on paper before the work is started. Then with the help of a small chisel and a wooden mallet a rough shape is given to the object. Then it is pressed by a file to remove the uneven surfaces. Fine carvings are done by means of various curved, straight and sharp chisels and files (Kalams) (PL.XXII, Fig.3). The chisels with narrow and pointed edges are specially used for carving out the details. These chisels are pressed on the surface and pushed to one side when a particle as small as dust is removed. Perforation work is done by drills. Articles are not generally fitted on hand-vices, but placed on wooden platforms and gripped within the two feet of the craftsman or the craftsman works holding it by one of his hands as convenient to him. Finishing strokes are given by iron pens (kalams). As in the case of other arts, the perfection in the carving can be obtained only out of experience. When the figure is completed, it is soaked in water for sometime. In some cases, the ivory articles are also bleached and washed with stone powder.

Sandpaper is used to smoothen the surfaces. Polishing is done by rubbing the article with fish scales, china clay, powder or common chalk lumps. In Kerala, polishing is done with the central rib of the leaf of bread-fruit tree. The advantage

in using the rib is that by the contact of its rough surface the article gets a shining finish. It is then washed in water. After rubbing out the water by a cloth, the article is brushed thoroughly.

The aforesaid technique is followed for other articles also, but no pencil sketch is required for many items. It has been observed that a skilled artisan can do work without any sketch. For fastening figures into stands and for joining parts, small fine ivory pegs are used.

The tools used by the ivory-carvers have hardly changed from early times. Excavated material shows that the saw was used in the Indus Valley Civilization for cutting ivory.[1] The same tool is still being used by modern ivory-carvers. Among other tools mention may be made of rasps and files, vice, scraper, float, gauge and mallet, chisel, hammer, drill and compass. Of these tools, files are found to be most useful at many points of ivory-carving.

The study of the techniques of ivory-carving reveals the fact that the tools and appliances used by the craftsmen may be essentially primitive and traditional, but the craftsmen require a great deal of the skill and dexterity to master the manipulation of these indigenous tools and implements. Each tool generally has a specific use to which it is put, and provides very little margin for further manipulation. In this respect, the technique of ivory-carving has great similarity with the technique of wood-carving which also requires consummate skill and experience.

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1. S.R. Rao, "Futher Excavation at Lothal", Lalit Kala, No.11, p.23.

5. Techniques of Metal Image-casting by Cire-perdué Process:

The technique of metal image-casting in India by cire-perdué (lost wax) process is supposed to be of high antiquity. According to some scholars[1] the small bronze statuette of the 'dancing girl' found at Mohenjodaro was most probably manufactured in cire-perdué process. But as no mould used for casting bronze has yet been yielded from the excavations at Mohenjodaro, it is very difficult to be precise about the actual method of casting, viz. direct casting from moulds or the casting by cire-perdué process. "The intricate patterns and designs reproduced in casting the 'dancing girl' would, however, indicate that most probably the 'lost-wax' process was employed, as direct casting from a mould would not produce a bronze of such a fine finish."[2]

Except for the 'dancing girl' of Mohenjodaro no other truly notable example of metal image produced by the cire-perdué process comes to light in India until the Gupta period. From this, however, it is not to be assumed that during this span of centuries the art of metal image casting by the lost-wax technique had gone completely underground in India. At Taxila, Sir John Marshall[3] reports that cire-perdué metal casting techniques were known and used at that time to produce gold and copper ornaments and other objects, preponderantly of Hellenistic design

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1. Chintamani Kar, Indian Metal Sculpture, London, 1952, p.1; Ajit Mookerjee, Indian Primitive Art, Calcutta, 1959, p.37 and Ruth Reeves, Cire-perdué Casting in India, New Delhi, 1962, pp.19-20.
2. Ruth Reeves, Ibid. p.20. This is a portion of a note written to the author by B.B. Lal, Archaeological Chemist in India.
3. Sir John Marshall, Taxila, Cambridge University Press, 1951, pp.40, 129, 570 and 572.

styles. Moreover, findings of two bronze images both of Pārśvanātha, belonging to the first century A.D. (now preserved in the Prince of Wales and Patna Museums respectively), a small hollow-caste bronze bull from Sahri-bahol[1], Gandhāra, datable to the third-fourth century A.D. as well as a standing Tīrthankara from Chausā[2], Bihar, datable to the second-third century A.D. show that the technique of metal image casting by cire-perdué process may have very much flourished during the Gupta period, but it was also in existence during the early centuries of the Christian era.

As already noted, the real development of the cire-perdué process took place during the Gupta period. Of the solid and hollow-cast bronze and copper images recovered from Mathurā, Sārnāth and some other places of Eastern, Northern and Western India, special mention may here be made of the Sultānganj Buddha which is considered to be the most notable and finest of all the bronze images of the Gupta period. The figure "was cast in pure copper in two layers which are clearly visible and the inner layer was moulded on an earthy, cinder-like core composed of a mixture of sand, clay, charcoal and paddy husk. The segments of this inner layer were held together by corroded iron bands originally three-quarters of an inch thick. The outer layer of copper seems to have been cast over the inner one, presumably by the cire-perdué process"[3].

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1. Chintamoni Kar, op.cit. plate 2.
2. Bulletin of the Prince of Wales Museum of Western India, No.V, 1950-51, Plate VII, fig.14.
3. R.L. Mitra, Journal of the Asiatic Society of Bengal, Calcutta, 1964. See also Ruth Reeves, op.cit. p.23.

During the Post-Gupta and the early mediaeval periods, copper and bronze images were also made on a large scale by cire-perdué hollow or solid casting technique. The most important sites, from where examples of bronze and copper images made in both hollow and solid casting techniques have been recovered are Nālandā and Kurkihār in Bihar, and Śirpur in Madhya Pradesh. Bengal, during the rule of the Pāla dynasty was also a very important centre of "cire-perdué hollow casting process, the influences of which reached far beyond Eastern India, right to Nepal, Tibet and North-Western India."[1]

As regards Śirpur bronze figures, M.G. Dikshit mentions the following technical process in which they were produced. While describing the images of Avalokiteśvara Padmapāṇi he writes: "In the first place, the pedestal (pīṭha) and the main image are cast separately. The bronze caster, taking advantage of the vertical stems in the delicate karnika, so fits it into the lotus on the pīṭha that the joint is almost invisible, the grooves seen on the karnika helping him considerably in this. The head-dress of the figures, the ornaments and other appendages are also made separately and subsequently attached at the appropriate places. The high head-dress, for instance, is always made by twisting a coil of long-drawn wires to a suitable shape and then attaching it to the bare head. The Yajñopavīta and the jewellery worn around the legs and the neck are also made separately and fitted to the main image; and it would appear that the cire-perdué process by which these images were cast gave

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1. Ruth Reeves, op.cit. pp.57-58.

little scope for the delicate finish which is characteristic of the jewellery which was carved later on when the figure was cast in full"[1]. On the strength of the large number of images found in the excavations, and also because of those accidentally discovered previously Sirpur in a hoard, it would seem probable that an independent school of metal craftsmen practising both cire-perdué hollow and solid casting techniques flourished from the eighth to the eleventh century A.D. in what is now Raipur District[2].

In South India, the most creative period of icon production by cire-perdué process was perhaps during the Chola period from ninth to thirteenth century A.D.[3]. A good number of metal images executed by the cire-perdué solid casting method have been recovered from the Tamil country, the most notable one, being the famous Naṭarāja in bronze. With the eclipse of the Cholas in the thirteenth century A.D., this period of metal image art merged, as far as design styles were concerned, into that of the less artistically distinguished one of the Vijaynagar period (fourteenth - sixteenth century A.D.)[4].

Literary References

Apart from the archaeological sources, a vast body of Indian literature belonging to the Gupta, Post-Gupta and the

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1. M.G. Dikshit, "Some Buddhist Bronzes from Sirpur, Madhya Pradesh", Prince of Wales Museum Bulletin, No.5, 1955-57, pp.4-8.
2. Indian Archaeology, 1954-55 - A Review, p.24.
3. Ruth Reeves, op.cit. p.24. See also V.A. Smith, The Oxford History of India, London, 1958, pp.226.
4. Ruth Reeves, ibid. See also D.R. Thapar, Icon in Bronze, Bombay, 1961, p.17 ff.

mediaeval periods also contains valuable information regarding metal image casting by cire-perdué process. The Agnipurāṇa and the Matsya Purāṇa of the Gupta period have in some detail described the technique of casting bronze images and also the selfless concentration with which the image maker must bring his work to completion.[1]

The earliest Śilpaśāstra that describes the lost-wax process is the Madhu-Chchhishṭhavidhānam as recorded in the 68th Chapter of the Mānasāra[2], believed to have been compiled in the Gupta period. As laid down in the formula for the preparation of wax intthis treatise, the bees wax and dammar (the resinous sap of the śāl tree) must first be correctly mixed (with a little oil). The proposed image should also be completely visualized and realized in the mind of the Sthapati through contemplation until it is finally ready to be modelled in the 'prepared wax' according to the instructions of the chief Sthapati. When the wax image is completed it should be purified with the five powdered pigments (pancha-varṇa). In preparing the wax models of the images, at the jointures of the component parts of the body they should be reinforced (before being covered by the clay mould) with copper rods or nails; and although the wax model will melt away (during furnacing), there should be no objection to using those supports (since they can be chiselled off after

1. M.N. Dutt, Agnipurāṇa (Translation), Calcutta, 1903-1904, Chapter 38.

2. 22;23. See also Ruth Reeves, op.cit. pp.29-31. It is interesting to note that a Tamil translation of it is reported to be currently used as a technical manual by the Sthapatis of Swamimalai (Distt. Thanjavur, Tamilnadu) who are engaged in producing metal images by the age-old lost-wax solid casting process.

the murti is cast). The finished wax model of the idol should then be taken in procession to the Sthapati's foundry or workshop to be cast. The Chief Sthapati must first calculate what allowances should be made for the contraction or expansion of the wax model (during casting of it) and enlarge it accordingly by adding wax to the extent necessary. The wax model is then ready to be covered with layers of mud,(moulding sand) and (when dry) must be heated and thereby the wax expelled. After casting, the mould should be sprinkled with water to cool it so that it (the cast iron) may be removed after it is broken open.

The Uttarabhāga of Śilparatna[1] belonging to the Gupta period also contains valuable information about image making by both solid and hollow casting techniques. The first chapter of the said treatise deals with the method of preparing the clay, while the second chapter deals with the technique of casting as described below.

Modelling the core: an image is first modelled, but to a slightly smaller dimension, out of the 'medium clay'[2]. This must then be covered with the 'fine clay'[3]. Over this (clay model) is put a (thin) layer of wax, the detailed modelling of which is done with the tools made of bamboo or tamarind wood. Over this, when finished, is put an application of the 'soft clay'

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1. Chap. I and II. See also Ruth Reeves, op.cit. pp.31-32.
2. This is composed of clay plus powdered pottery tiles and nut water. This mixture should first be dried, then pounded on a pounding stone to fine powder and mixed with dung.
3. This is composed of three parts of clay plus one part of powdered pottery, mixed together on a grinding stone. This mixture is again pounded on the grinding stone with an admixture of dung.

which is composed of three parts of clay plus one part of powdered pottery, mixed together on a grinding stone. An orifice is made at the bottom of the clay mould, the latter being allowed to dry and, with a slight application of heat, the wax (inside the mould) is expelled (from the mould) through the orifice. The mould is heated red-hot and put in position, orifice end up. Into this the molten metal is poured, flush to the top, by skilled and experienced hands. If the image to be cast has to be solid and heavy, then the wax model of it must be prepared out of a solid piece of wax. This is covered with layers of mud (clay), the wax expelled and the cavity (thus left empty within the clay mould) filled with molten metal. This will result in a solid metal image.

The traditions and techniques of metal casting in India are also recorded in numerous texts of the mediaeval period, i.e. from seventh to twelfth centuries A.D. and even later. The Jaina Anuyogadvara Churni mentions hollow casting and Vishnudharmottara both solid and hollow casting by the cire-perdue method.[1]

The Vishnu Saṁhitā[2] mentions that if an image is to be made of metal, it must first be made of wax, and then coated with earth; gold and other metals are purified and cast into (the mould) and a complete image is thus obtained by capable workmen.

Of the latter texts, i.e., the Samarāṅgana-Sutradhara, and the Yuktikalpataru, a mediaeval encyclopaedic work which is

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1. Vishṇudharmottara, III. 43-44. See also Ruth Reeves, op.cit. p.32.
2. Chap. XIV.

most important from the point of view of the techniques of the cire-perdué process, is the Mānasollāsa[1] or Abhilāshitārtha-Chintāmaṇi (circa twelfth century A.D.) which gives a very clear understanding of the cire-perdué metal casting method of that time. This text is considered to be the last of the few hitherto known texts on the subject, as it furnishes us with every detail of the process, stage by stage, from the preparation of the model to the finishing of the metal cast. The details of the cire-perdué casting process as given in the text are summarised as follows :-

(i) According to the Navatāla measurement the expert should first prepare the image (i.e., the model) complete with all its limbs;

(ii) after placing the wax tubes of the length of a dhatura flower on the back, on the shoulders and on the neck or the crown (of the image), (the artist) should besmear the image with refined clay;

(iii) to clay should be added charred, husk, finely rubbed, and cotton severed a hundred times and a little finely powdered salt. All these (when mixed with clay) should be(finely) ground on a smooth stone and (the paste) should be applied three times all over and round (the image);

(iv) the first layer (of clay) should be transparent (and thin) and should be dried up in the shade. After a couple of

1. Edited in the Gaekward's Oriental Series, Verses 77-97 of the first Prakarana (part of this book). See also S.K. Saraswati's translation of the passage from this work which appeared in the Journal of the Indian Society of Oriental Art, Vol.IV, No.2, Dec. 1936, pp.142-144, and Ruth Reeves, op.cit. pp.33-34.

days a second layer should again (be applied). When dry again, there should be the third coating quickly applied;

(v) (one) should besmear the whole (image or model) with clay leaving the mouths of the tubes open, and the wise man should dry up (the clay coating) with care and judgment;

(vi) the expert should first (i.e., before beginning the process, just mentioned) measure the wax of the image which has to be made either in brass, or copper, or silver or gold. Brass and copper should be taken ten times that of wax, silver twelve times and gold sixteen;

(vii) (then, one) should encase the metal, either gold or one that is desired, with clay and cocoanut-shaped crucible(thus formed) should be dried up in the aforesaid manner;

(viii) next (one) should melt away the wax (from the mould) by heating (i.e., the mould) in fire and should afterwards heat the crucible in cinders;

(ix) brass and copper melt surely with (the help of) cinders just kindled. Silver melts with (the help of) glowing cinders, while gold with (the help of) cinders flaming fivefold;

(x) after making a hole with an iron on the top of the crucible and holding it tightly with a pair of tongs (one) should bring the heated crucible (out of the cinders);

(xi) (one) should place a burning wick in the mouth of the tube of the heated (mould of the) image;

(xii) after bending carefully the crucible, held tightly by the tongs, (one) should pour molten metal into the mouth of

the tube in a continuous stream and stop when it is full to the brim of the tube;

(xiii) the adjacent fire should be put out for the purpose of cooling (the mould with the molten metal). When the image (i.e. the mould) gets naturally cool, the expert should break up the clay (mould) very carefully;

(xiv) then the metal image (thus prepared) verily resembles that in wax, endowed with similar limbs and other details;

(xv) when there is seen anything superfluous that should be put right with that charana; the tubes should also be cut away and after that (the image) would have to be finished.

The survey of the techniques of image-making by cire-perdué process, therefore, shows that the craft has been widely practised in different ages, and as it appears, the basic principle underlying the production process of the cire-perdué casting method has always been the same throughout the ages. Even today, this age-old art of cire-perdué metal casting is a living tradition in many towns and villages in India. A consolidated account of the techniques of cire-perdué casting as followed by the craftsmen of a few important centres in the country is presented below :[1]

The important stages of the technique of cire-perdué

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1. See Survey Reports published by the All India Handicrafts Board, New Delhi; Report Nos.25 (1964), p.32, 51 (1963), pp. 6-7, 58 (1964), p.2, 64 (1965), pp.42-43, 65 (1964), p.6, 69 (1965), p.6, 72 (1967), p.3, 75 (1967) and 87 (1965), p.9. See also B.K. Roy Burman (ed.), Census of India, 1961, Vol.I, Monograph Series No.4, Part VII-A, "Cire-perdué Casting in Swamimalai", 1967, pp.31-33; P.K. Nambiar (ed.), Census of India, 1961, Vol.IX, Madras, Part VII-A-V, "Icons in Stone and Metals", 1964, pp.8-14 and Ruth Reeves, Cire-perdué Casting in India, New Delhi, 1962, pp.36-119.

casting popularly known as 'lost-wax process' are (i) preparation of wax model, (ii) preparation of mould, (iii) melting of wax model and draining out of wax, (iv) casting, (v) opening of the mould, and (vi) cleaning, finishing, polishing and engraving.

(i) Preparation of model or replica:

Preparation of model or replica is one of the most crucial stages of cast icon-making. It is both a process and a product. In the lost-wax solid casting process, the exact replica of the figure to be produced is first fashioned in hard wax, the plasticity of which is achieved in warming it over a charcoal braizer (PL.XXII, Fig.4). When all the parts of the object are made, they are joined together to form the full figure. Then, with the help of chisel and hammer, the artisan gives final touches to develop ornamental details and smoothens the image. In case of larger icons, the wax pedestal and the body are modelled separately. A few cross strapings made with wax, are also fixed on to the wax model - the number depending on the size of the figure to be made, to provide strength for the wax model on the one hand, and to facilitate easy flow of the molten metal to the various parts on the other. A wax rod ending in a funnel-shaped flange, known as the wax runner, is also fixed to the base of the wax model. Later on, when the mould is heated and the wax is drained out, this serves as an ingress for the molten metal. Thereafter the model is covered with successive layers of clay till a fairly thick and solid coating is obtained. The model is allowed to dry in sunshine. In the lost-wax hollow casting a stylised clay model of the object which the artisan p'

produce in metal is first made, and over this is applied a thick coating of wax that is appropriately shaped by fingers and wooden spatulas. The thickness of the wax-coating depends on different considerations, such as durability, size of the image, etc. The wax coating with the complement of runner-cum-pouring channel, is then covered with clay.

(ii) Preparation of mould:

In the solid casting process, the mould is obtained by giving sand-free clay coatings on the wax model at different layers. For each layer, a different type of clay is used. Generally, three coatings are required in case of small images; more coatings are required in case of the larger ones. While applying the clay coating, the wax model is kept over a piece of paper on one side and then the clay coating is applied on the other side (PL.XXIII, Fig.1). In case of large images the model is kept over sand so that it is not deformed by the pressure of its weight. After application on the wax model the clay coating is allowed to dry. After that the model is turned on the other side to which also clay coating is applied. Drying is done either under mild sun or in the shade, so that the wax model is not melted.

The first coating is important in two ways. It gives protection to the wax model and also it conveys the contours of the model to the cast image. The inner surface of the coating receives the impress of the wax model and preserves the same; it also receives the molten metal and gives shape to the same. It is, therefore, necessary that the first coating should

very fine in texture so that the minutest details of the wax model are truthfully preserved and also the mould has enough elasticity to withstand the heat of the molten metal when the same is poured into it.

The second clay coating is applied over the first. The thickness of this coating varies from ½" to 2" according to the size of the image. After the second coating is dried, a third coating is made. If necessary, a fourth coating is also applied. If the image is larger one, the mould is reinforced with iron rods and wires lest the mould would give way when the hot molten metal is poured. Formerely, the artisans made use of broken earthen ware pieces instead of iron wires and rods for reinforcing the structure of the mould. Even now some artisans follow this archaic method.

When the replica is encased an orifice at the bottom of the replica is left as an outlet for melting wax to drain out. The molten wax passes into the mud pot in which it is placed. In the hollow casting process the mould is prepared first by enveloping the clay replica by applying appropriate coating of wax. The thickness of wax coating on the clay replica is determined by the required thickness of the article to be cast. Care is taken to spread the wax over the required surface of the inner core with an even thickness lest it should produce weak spots or holes when the metal is cast. The wax coating with the complement of runner-cum-pouring channel is then covered with a fine paste of clay and mud. After the layer of clay is drie

another layer of rough mud and clay is spread evenly over the entire surface leaving a small opening which has a direct connection to the wax mould. After covering the entire mould with the rough clay it is kept in the sun to remove all the moisture contents of the outer shell. Once the mould is dried, the wax is melted out by heating the mould and the inter-cellular space between the original mud core and the outer layer of clay is filled with molten metal.

(iii) Melting of wax model and draining out of wax:

The finished mould with the wax model or wax-coating on the clay mould, is heated over an open ground oven. The wax model or the wax-coating is melted by the action of the heat, and the wax is drained out through the funnel-shaped flange which is fixed to the base of the wax or the clay mould. The melted wax is received in a small pit, and preserved so that it may be used again after removing the foreign materials.

(iv) Casting:

The brass, bell-metal, bronze or copper as the case may be is heated in a crucible in the oven. Simultaneously with the preparation of the alloy, the mould is also heated to the required point. The hot mould is then removed from the kiln and buried in the earth in an inverted position up to the mouth of the orifice so that it will remain in up-right position when the molten metal is poured into it. Then the molten metal is poured into the orifice in a thin and even stream (PL.XXIII, Fig.2).

Care is taken that the stream does not cover more than half the orifice so that displaced air from the hollow cavity of the mould can escape. In case of hollow-casting process the molten metal poured into the inter-cellular hole occupies the inter-cellular space which had been the original position of wax. It is to be noted that at the time of pouring the molten metal, a piece of sack covering the mouth of the crucible, is kept in position with the help of a stick. The molten metal percolates through it so that floating impurities in the molten metal cannot flow into the mould. The mould is now allowed to cool down gradually. Normally, it takes about one day. If the mould is to be broken open early, it is drenched with water, two or three hours after casting. In case of an icon, the object is generally cast into two parts. The main part is the figure of required God or Goddess, and the other part is the pedestal on which the icon is supported.

(v) Opening of the mould:

When the mould has sufficiently cooled down, it is taken out from the earth in which it is buried. It is then broken open to bring out the solid or the hollow metal image (PL.XXIII, Fig.3). The portion of the mould holding the head of the icon is always broken open first.

(vi) Cleaning, finshing, polishing and engraving:

The last stages in the preparation of a metal image are its cleaning, finishing, polishing and engraving. First, the clay particles sticking to the image are thoroughly cleaned with a scraper. After this, a chisel dressing is done to eliminate

casting blemishes and to bring out the fine details of the original wax model of the image (PL.XXIII, Fig.4). Then the surface is made smooth with a special type of instrument. Afterwards, filing is done to render the surface more lustrous. Finally is undertaken the process of polishing. The image is thoroughly rubbed with strips of fine grade emery paper rendering the surface mirror smooth. This is followed by the traditional cleaning with a solution of tamarind water after which a soapnut solution is applied with a brass wire brush, and finally the icon is given a brisk brushing with polishing sand and water.

The survey of the techniques of image-making by cire-perdué process shows that the craft, in spite of numerous political and social upheavals and numerous technological innovations has persisted through the ages. Some variations may have been noticed in both materials and techniques of production, but regardless of time and place, the basic principle underlying the two distinct production processes of the cire-perdué casting method, namely, solid casting and hollow casting, is and always has been the same in traditional India. This is possible mainly because of the craftsmen's vigorous adherence to age-old convention.

6. Techniques of Textiles:

"The making of utilitarian fabrics has been a concern of man for thousands of years; he has discovered, long ago, that textiles offered a means of aesthetic expression."[1] In India also the technique of making textile fabrics has been practised from

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1. Verla Birrell, The Textile Arts, New York, 1959, p.1.

very early times. Fascinating evidence regarding cloth weaving was provided by impressions on a trough found at Alamgirpur, a Harappan site in the District of Meerut, Uttar Pradesh.[1] The yarn seems to have been fairly fine, though not of uniform section, the technique being that of plain weave. The most remarkable find of textile fabric, however, was available at Navasa, a Post-Harappan Chalcolithic site in the district of Ahmadnagar, Maharashtra. The find shows a necklace of seventeen barrel-shaped copper beads strung with thread. A.N. Gulati, who examined the thread, is of the opinion that it was of white silk, apparently spun from cocoons on a cotton nep.[2] This is thus the earliest evidence of silk fabric in India. Further, the cotton nep indicates the spinning of cotton as well.

Apart from the archaeological evidences, references to different techniques of textiles are also available in early Indian literary sources. In the Rigveda[3] we find mention of the woof (otum), warp or loom (tantra) and weaver's shuttle (tasara).

Both the Buddhist and the Brahmanical sources are acquainted with dyed clothes. The washerman or the dyer (Rajaka)[4] dyed cloths after properly washing them. New as well as washed clothes were dyed.[5] We are told that after washing properly, the washerman dyed the clothes with blue, yellow, red or saffron clours.[6]

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1. Indian Archaeology - 1958-59, p.52.
2. Indian Archaeology - 1959-60, p.28.
3. VI.9.2, V.9.3, X.71.9 and X.130.2.
4. Digha Nikāya, I.51.
5. Majjhima Nikāya, I.36, 384-85.
6. Majjhima Nikāya, I.36 and Saṁyutta Nikāya, V.121.

The place where the weaver piled his loom is referred to by Pāṇini as āvāya (āvayanti asmin)[1], the loom as tantra[2], and the shuttle as pravāṇi[3] (tantuvāya - śalākā, kāśikā). The process of weaving comprised stretching the warp and then weaving threads across it with a shuttle (āstirṇam tantram, protaṁ tantram).[4]

More light is thrown on the washerman or the dyer by Kauṭilya. He says that clothes which were to be washed only, were to be returned within one to four nights; those which required light colouring in five nights; which were to be made blue, in six nights, and those that were to be made as red flower, lac, or saffron, or required much skill, in seven nights.[5]

In the Amarakoṣa[6] the details of silk-weaving are referred to. At first the silk threads were prepared from the cocoon and then they were woven into fine fabric, which was afterwards bleached.

Dyeing and embroidery were quite well-known. From a close examination of the Ajaṇṭā paintings of the Gupta period we notice certain well defined coloured designs and embroidery of the garments.[7] Apart from embroideries, at least four surviving techniques have been identified: bandhana or ordinary tie-and-dye work, double tied-resist dyeing in which warp and woof are dyed

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1. Pāṇini, III.3.122.
2. Ibid. V. 2.70.
3. Ibid. V.4.160.
4. Cf. Bhāshya, I.338.
5. Kauṭilya, IV.1.
6. 3.180, p.313 and 6.113, p.157.
7. Codrington, Indian Antiquary, 1930, pp.159-62, Plates p.160-"A" Costumes and "B" Textiles. See also Irwin, The Art of India and Pakistan, etc., p.203.

separately before weaving according to the pattern required, brocading, and fine muslin weaving. The most prominent types of design are composed of bands alternately filled with geometrical devices, such as chevrons, circles, strips, checks, etc., and formal floral motifs or scrolls, sometimes enlivened with processions of sacred geese (haṁsa) or lions. Diagonal bands of geese also appear, as well as patterns made up simply of dots or sometimes groups of dots.

The dukula mentioned by Kālidāsa[1] had white impressions of swans evidently on a blue background to imitate the flight of birds in the sky. Probably the figures were sketched in with wax and then dyed in an indigo vat.

Bāṇa refers to a particular method of cloth-dyeing, known as 'tie and die'. The custom is still common to Rajasthan and Gujarat where it is known as 'bandhya' meaning to tie, because a dyer first ties the cloth at very small intervals, thus dividing it into numerous distinct parts which he subsequently dyes in different colours. The tied cloth remains white. Afterwards, all knots are united and the cloth is dried in shade. Thus different kinds of fine looking designs are put on clothes. For these designs Bāṇa used the term bahu-vidha-bhakti, an art in which household ladies were proficient.[2]

Printing of the designs of leaves and flowers on cloth can also be inferred from Bāṇa's descriptive term 'Kuṭilakrama-rūpa-pallava-parabhāga'[3] which is a compound of four technical

1. Kumār, 5.67; Raghu, 5, 17-25. See also Jamila Brij Bhushan, The Constumes and Textiles of India, Bombay, 1958, p.25.
2. Harṣacharita of Bāṇabhaṭṭa, IV, p.143.
3. Ibid.

terms : (i) Kuṭilakrama, (ii) rūpa, (iii) pallava, and (iv) parabhāga. The word rūpa is taken up by V.S. Agrawala to denote the blocks used for printing.[1] The word parabhāga, according to Śankara's Commentary, means the printing of one colour on a surface of another colour.[2]

Jean Baptiste Tavernier[3] referred in the seventeenth century to the 'chites' or painted cotton cloths of India and the painted curtains and bed spread of Māsulipaṭam. The 'chites' popularly known as 'calmendār' were made with a brush. Francois Bernier, the famous French traveller, writing from Lahore on February 25, 1665 also referred to the beautiful hand-painted 'chintz' manufactured at Māsulipaṭam.[4]

The published sources of the late nineteenth century also contain valuable information about the techniques of textile fabrics such as printed calicoes, paṭolā, Kashmir shawls and jāmdānī muslins. As regards Calico-printing, T.N. Mukharji[5], has recorded the following :

In Calico-printing the first process is the washing, which is done by the washerman. The cloth is then bleached and washed again. A mordant consisting of myrobolans, galls, and Acacia Arabica Legumes is then applied to the cloth which when dry is placed on a flat block of wood and beaten with a club to obtain

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1. Harsacharita - Ek Sāmskṛitika Adhyayana, p.75.
2. Harṣacharita, VII, p.207. See also Brij Narayan Sharma, Social Life in Northern India (A.D. 600-1000), Delhi, 1966, pp.275-276.
3. Travels in India - translated from the original French edition of 1676 by V. Ball, 1889, Vol.II, p.4.
4. R.J. Mehta, The Handicrafts and Industrial Arts of India, Bombay, 1960, p.119.
5. The Art Manufactures of Bengal, Calcutta, 1888, pp.349-350.

an evenness of surface. The cloth is then printed with different kinds of prepared dyes by means of wooden stamps on which the patterns are cut. In Calcutta, the cloths, after being stamped, are boiled in a dye solution that imparts to them a reddish tinge which is a fast colour. Tinsel printing is largely done in Calcutta. The art consists of stamping on the cloth, by hand-block, a preparation of gum, and then fixing, upon the patterns thus formed in gum, false gold or silver leaf. Before stamping, the cloth is always dyed a plain colour. Gold foil is generally applied on a violet ground and silver on red.

As regards patola T.N. Mukherji says[1], "it is woven of coloured silk threads with warps and wefts which have been separately tied and dyed by the bandhana or knot-dyeing process. The dyer takes a small bundle of the warp after it has been dyed in the lightest colour, and draws in pencil across it some lines at measured distances, according to the design to be produced. His wife then ties the silk, along the spaces marked tightly round with cotton thread, through which the dye will not penetrate. It is then dyed with the next darker colour found upon the warp, and the process is repeated until the darkest colour is reached. The weft is then treated in the same way, being so tied and dyed that, in the loom, when it crosses the warp, each of its colours may exactly come in contact with the same colour in the warp. The little bundles of warp have next to be arranged in the loom by the weaver, who then takes the little bundles of weft one at a time, using each in its own place through the design."

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1. Ibid. pp.360-361.

T.N. Mukharji[1] also records in short, the basic techniques of Kashmir shawl weaving. The Kashmir shawls are of two kinds; the first is the loom-woven, in which the pattern is produced in loom itself by the aid of a vast number of small bobbins carrying the coloured Pashm, the shuttle and cross threads being only used to secure the whole fabric; the second is the cheaper kind, in which the whole of the pattern is embroidered with the needle.

According to T.N. Mukharji[2], the technique of jāmdānī-weaving is also very interesting. The long warp threads being arranged, the weaving is begun as in the case of a piece of ordinary cloth and a pattern of the embroidery drawn on paper is pinned beneath. As the weaving goes on, the workman continually raises the paper pattern to ascertain if his woof has approached closely to where any flower or other figure has to be embroidered, and when the exact place is reached, he takes his needle (i.e. a bamboo splinter) and as each woof thread passes through the pattern, he sews down the intersected portion of it, and so continues until it is completed.

As it appears, most of the age-old techniques of textiles are still practised by most of the weavers of the country. A consolidated account of the most important traditional techniques as followed in textile weaving, dyeing and printing and embroidered fabrics is presented below :

I. WEAVING:

1. Cotton and Silk Weaving:

The art of cotton or silk weaving involves different

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1. Ibid. pp.373-374.
2. Art Manufactures of India, Calcutta, 1888, pp.368-370.

processes. Before we discuss about different processes, it is necessary to give a brief description of the important types of looms generally used in the weaving techniques.

(a) Throw shuttle loom:[1] This type of loom is fitted to four bamboo or wooden posts fixed in the ground. Of the primary motions, shedding (opening of the warp threads) is effected by a set of healds operated by the foot, while the shuttle is thrown across the shed by one hand from one side and caught by the other at the opposite side of the cloth. The beating up of the weft is done by a reed commonly made of bamboo fitted on to a sley which is given a to and fro motion also by the hand (PL. XXIV, Fig.1).

(b) Loin loom or Back strap loom[2]: In this loom the warp of manageable length and breadth is fastened at one end generally to a wall of a house, while the other is tied to the waist of the weaver with a cotton or leather belt. This loom has no frame or superstructure. It generally consists of two fixed posts, two ropes, six bamboo or wood bars and a leather belt. No reed is used, and the shed is effected by half-heald process operated by hand. The weft yarn is inserted in the shed by means of one bamboo tube, and a wooden string is used for beating up of the weft (PL.XXIV, Fig.2).

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1. E.N. Pakyntein (ed.), Census of India, 1961, Vol.III, Assam, Part VII-A, Selected Crafts of Assam, 1966, p. 5. See also, P.P. Bhatnagar (ed.), Census of India, 1961, Vol.XV, Uttar Pradesh, Part VII-A, Handicrafts Survey Monograph No.6, "Cotton Textiles Industry in Uttar Pradesh", 1965, p.9.
2. E.N. Pakyntein (ed.), Ibid. p.5. See also H. Zpinaga (ed.), Census of India, Vol.XXIII, Nagaland, Part VII, 1966, p.12.

(c) Fly-shuttle loom[1]: This is an improved type of frame loom which considerably increases the output of the weavers. It has a sley with shuttle boxes at the ends, and the shuttle is pushed from end to end across the sley by pickers attached to a string arrangement pulled with right hand from side to side. The beating up of the weft is done by a reed made of steel fitted on to a sley which is given an oscillating motion also by the hand (PL.XXIV, Fig.3).

(d) Pit-loom[2]: This type of loom is almost similar to that of fly-shuttle loom, the only difference being that a square pit is dug in the ground where weavers put their legs. It consists of (i) a wooden sley with bamboo reed, (ii) two shafts with cotton string healds, (iii) a warp beam which can be let out with the help of a cord, (iv) a take-up beam on supports and (v) a pair of pedals placed in a pit in the ground where the weaver sits and operates them by his feet (PL.XXIV, Fig.4).

Weaving processes[3]:

(i) Wetting: This operation is required only in case of undyed yarn. The hank of the yarn is loosely tied and placed in a reservoir, the water of which has to be changed every day. The yarn meant for the warp is required to be kept for 3 days and the

1. E.N. Pakyntein (ed.), Ibid. p.5. See also P.P. Bhatnagar (ed.), op.cit. p.9.
2. E.N. Pakyntein (ed.), Ibid. p.5. See also P.P. Bhatnagar (ed.), op.cit. p.8.
3. K.C. Dubey and H.C. Jain, Census of India, 1961, Vol.VIII, Madhya Pradesh, Part VII-A, Handicrafts Survey Monograph No.2, "Handloom Sari Industry of Maheswar", 1965, pp.31-36. See also P.P. Bhatnagar (ed.), op.cit. pp.19-22; Jamila Brij Bhusan, op.cit. pp.67-68 and E.N.Pakyntien (ed.), op.cit. pp.5-8.

weft yarn for 1 day. The yarn is then dried. The object of wetting is to remove from it any foreign matter that it may contain and to make it suitable for the absorption of sizing material.

(ii) Sizing: The warp-yarn is then starched for stiffness and glaze. The material used for sizing is flour and til oil. The flour is first boiled with water and is then put in a tub. The requisite amount of oil is also put and a substantial quantity of water is added. The hanks of yarn are dipped in this mixture and thrashed so that the sizing mixture penetrates the hank. After sizing, the yarn is dried in the sun.

(iii) Bleaching: The skeins received from the mills are yellowish and are not sufficiently soft. Degumming is performed by dipping these skeins in cold water, then transfering them to a soap solution kept at boiling point for fifteen minutes. The wet skeins are then removed and thoroughly dried. To secure greater whiteness, the yarn is boiled in a solution of impure carbonate of soda and slaked lime. The skeins are soaked for several hours in cold water before bleaching. Then they are immersed in a large vessel containing boiling acid solution and are thoroughly rinsed with the help of sticks removing all dirt and gum. The skeins are immersed in cold water and then dried in the sun.

(iv) Dyeing: If the clothes are made of coloured yarn, the yarn is dyed. The method of dyeing of yarn is simple. The colour is prepared in a big vessel (vat) by dilution of dye in water and is boiled. The hank is hung through a rod into the boiling solution so that its lower portion remains in it and by

gradual rotation of the rod the entire hank, in the course of time, is passed through it. The hank is squeezed and is dried in a place not open to sun.

(v) Winding: Winding is the operation of transferring yarn from the hanks to bobbins for the warp. The operation is accomplished with the help of a spinning-wheel (charkhā) and a revolving frame (creel). The hank is smeared round the creel and the winder draws a thread from the smeared hank attached to the bobbin. The bobbin is then placed on the spindle which is given revolving motion of the wheel. Thus the yarn is passed from the hanks to the bobbins.

(vi) Warping: Two types of warping are generally practised now-a-days - the street warping and the drum-warping, the latter being the advanced technique. The requirements for street-warping are four thick strong posts, some uniformly thick sticks of about 3 feet length and some rope. Two posts are fixed crossing each other. At the top end of these horizentally tied a stick and to this stick is attached a piece of rope which is tied to a nail fixed on the ground. The other two pots are similarly placed at some distance away, the distance being equal to the length of the warp.

One end of the warp thread is tied to the horizontal bar placed over the crossed posts and the warper then moves towards the other pair of crossed posts with the creel in his right hand and the leasing frame in the left. At suitable intervals between these posts are placed some pairs of lease rods to enable the

warp threads being maintained in their respective positions. As the warper reaches the lease rods, he raises the lease-frame held in his left hand which results in a division of the warp thread, putting an equal number of threads up and down. The process is continued till the required number of threads, enough for the width of the cloth to be woven, is secured. The warp is then wound in the shape of a ball without affecting the leases which are maintained by inserting thicker threads in place of the bamboo lease-roads, these being retained only at the end of the warp.

Drum-warping is an improvement over street-warping and is so called since warping is done with the help of a drum which is worked by hand. A sufficient number of warp bobbins are attached in rows to the vertical stand with the help of the attachments provided on the stand. From these warp bobbins on the stand, threads are drawn forward to the warp-drum and tied to the hooks therein. After threads are tied to the hooks, the warp-drum is given a clockwise rotary motion by the warper and the drum is rotated till the required length of the warp is obtained.

(vii) Denting: Denting is the process of drawing warp-ends through the dents of the reed. For this two persons are required: one for picking up the threads in twos in succession and the other for drawing them through the reed with the help of a hook. The process is repeated till the warp ends pass through the reed.

(viii) Beaming: It consists in winding of warp threads on warper's beam. The warp is stretched to full length and the ends

of the threads nearer the reed are tied to the beam and the beam is then wound. The other end of the warp is held tight by tying it to a sufficiently heavy piece of stone or wood or it is tied to some pillar. As the beam is wound, the reed is moved forward to make more of warp available for further winding. Thick paper strips or thin bamboo strips are put in between the layers to prevent the layers of thread from stopping at the extreme ends of the beam.

(ix) Heald-knitting: The purpose of this process is to keep the warp threads parallel to one another and divide them into sheds while weaving is done. The healds are knitted in halves. The warp threads are drawn through the eyes of strings of the heald with the help of a needle or a wire hook specially made for the purpose. The knitting of the heald is done in halves and the order of the draught commencing on the left hand is 1-3, 2-4 and so on, i.e., leaving one eye of the strip in first process of knitting one half of the heald. The remaining eyes of strips are used when the knitting of the other half is done. When all the threads of the warp are drawn in, they are tied with the reed. The care to be taken in heald-knitting is to see that no more than one thread of the warp should pass through the heald.

(x) Final check-up: Before starting weaving, the weaver has to ensure if the parts and accessories of the loom are in proper order and placed in their appropriate position.

Warper's beam or back-rest is fixed at the other end of the loom. The reed and heald are drawn nearer to the weaver's

beam and the reed is placed in the groove of the sley and the heald is attached to the lever of the loom by rope. The lower portion of the heald is connected to the treadle by rope. It is checked if the warp's threads are properly fixed in the groove of the warper's beam. The picking strings are properly adjusted so that the shuttle has free, unrestricted movement during weaving. The pirn containing weft-yarn is placed in the shuttle and one end of it is drawn through the eye of the shuttle. The weaver also checks up if the balls of warp are properly hung and there is enough thread for weaving.

(xi) Weaving: After the warp has been spread on the loom and all the instruments used made ready, weaving begins.

The art of weaving is usually governed by three primary motions, viz. the shedding motion, the picking motion and the beating motion. The shedding motion consists in depressing the treadle by one foot which results in making an opening in the warp threads. The picking motion consists in propelling the shuttle by giving an oblong pull to the handle. This results in a push to the shuttle in the shuttle-box and lets the shuttle run across the opening to the other side. The beating motion consists in beating up the weft thread by drawing the sley forward.

The weaver gives motion to the loom through the treadles by his feet. By working the treadles the weaver raises or lowers the threads of the warp. The heddles, the treadles, and the threads of the warp are all inter-connected and each alternative motion of the foot for raising or depressing the warp threads

forms a shed. There are shuttle boxes at the ends and through the shed the shuttle is pushed from end to end across the sley by pickers attached to a string arrangement pulled with right hand from side to side, while beating is done by putting the sley with the left hand. The process is continued and as the weft thread posses from side to side, now over one set of warp threads and under another and then under the first set of threads and over to the other set, the net work which forms the fabric is produced.

(xii) Figured weaving: For manufacturing figured cloth, the pattern is drawn on paper below the warp. The weaver then ranges, along the tract of the weft, a number of cut threads equal to the size of the pattern. With the help of two small pointed bamboo sticks, he draws each of those threads between as many threads of the warp as may be equal to the width of the figu re intended to be formed. When all the threads have been brought between the warp, they are drawn close. The shuttle is then passed through these threads and the weft having been driven home by the beat of the sley, the shuttle is returned. The weaver again draws the threads with bamboo sticks and moves the shuttle through them taking care each time to pass the cut threads between a greater and lesser number of warp threads depending on the width of the intended design at that point.

2. Muslin or Jāmdānī weaving[1]:

In manufacturing figured muslin two weavers sit at the loom. They place the pattern, drawn upon paper, below the warp,

1. Jamila Brij Bhushan, op.cit. p.64.

and range along the tract of the woof a number of cut threads equal to the flowers or parts of the designs intended to be made; and then with two small pointed bamboo sticks they draw each of these threads between as many threads of the warp as may be equal to the width of the figure which is to be formed. When all the threads have been brought between the warp they are drawn close by the stroke of the lay. The shuttle is then passed by one of the weavers through the thread; and the weft having been driven home it is returned by the other weaver. The weavers resume their work, with their pointed bamboo sticks, shuttle in the manner above described, observing each time to pass the flower threads between a great or less number of the threads of the warp in proportion to the size of the design to be formed.

3. Patolā-weaving[1]:

In patolā-weaving warp and weft threads are separately tie-dyed and woven. First the silk warp is dyed in the lightest colour. When this is over the required design is drawn on with a pencil. The pencil marked areas are tied with wax thread. Then the fabric is dyed in darker colour. This is repeated till required darkest colour is effected on the fabric. The weft is also dyed in the same fashion. After dyeing is finished, threads are woven (PL.XXV, Fig.1).

The art originates from ikat techniques, in which warp and weft threads are separately tie-dyed before weaving. To site other examples having more or less similar techniques are telia rumals of the Deccan and the tie-dyed cotton shawls of Orissa.

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1. T.M. Abraham, Handicrafts in India, New Delhi, 1964, pp.146-147.

4. Carpet-weaving[1]:

Carpet-weaving is still followed in the primitive way. There are two horizontal beams which are carried by upright posts. The posts are fixed in required space because the needed width of carpet corresponds to the space of the posts. The warp thread or chains by which the carpet is to be woven is wound on those two horizontal beams. The weavers sit side by side. Experienced weavers sometimes sit at the sides or at the spots where floral patterns are to be woven. The design to be followed is hung on the loom in front of weavers. When the weaving starts, the warp begins to unwound from the upper beam, and gradually row by row is finished. When one row is finished, two weft threads are put in. First thread is placed in the shed formed between the front and back halves of the chain. The second thread is put in an alternate shed which is formed by the weaver putting forward the back half of the chain temporarily in front of the front half. Knots are often Persian, the two loose ends of the yarn come singly between two adjacent warp threads unlike in Turkish knot where both ends appear on the surface between warp threads.

5. Brocade-weaving[2]:

In brocade-weaving a kind of inverted heddles called the naksh (picture i.e. design) is hung above the warp immediately behind the heddles; the other ends of the cords being fastened to a horizontal band running below the warp. Like the cords of a heddle, the naksh strings where they cross the warp have loops

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1. T.M. Abraham, Ibid. pp.118 and 121.
2. T.M. Abraham, Ibid. p.131.

through which certain of warp threads are passed. But instead of getting an up and down motion from treadles pressed by the weaver's foot, the naksh is worked from above, by a child, seated on a bench over his father's head. The little fellow holds a bar of wood and by giving it a twist, draws up the cords attached to the threads of the warp, which according to the naksh or pattern are at any time to appear in the surface of the web. The weaver at the head of the loom, adds variety to his design by working silks of diverse colours into the woof, along with the threads of silver and gold (PL.XXV, Fig.2).

6. Kashmir Shawl-weaving[1]:

The technique of Kashmir shawl-weaving is very interesting (PL.XXV, Fig.3). When the warp is fixed in the loom, the pattern drawer and the person who determines the proportion of yarn of different colours to be employed are consulted. The workmen prepare the needles by arming each with coloured yarn. The needles without eyes are made of light and smooth wood and have both their sharp ends slightly charred to prevent their becoming rough or jagged through use. Under the superintendence of the person who determines the proportion of yarn of different colours, the weavers knot the yarn of the needles to the warp. The face or right side of the cloth is placed next to the ground, the work being carried on at the back or reverse on which hang the needles in a row. As soon as the master is satisfied that the work of one line of woof is completed, the comb is brought down upon it with a vigour and repetition apparently disproportionate to the delicacy of the materials. The cloth of the shawls

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1. Jamila Brij Bhushan, op.cit. p.72.

is generally of two kinds - one plain or of two threads; the other twilled or of four threads. Two persons are employed in weaving. One throws the shuttle from the edge as far as he can across the warp; it is then seized by the second weaver who throws it on the opposite edge and then returns it. When the shawls are completed they are submitted to the cleaner, who frees the shawl from discoloured hair or yarn and from ends or knots. Then the shawls are washed in clear cold water, soap being used with great caution on white parts only, and never on the embroidery. Coloured shawls are dried in the shade, while the white ones are bleached in the open air, and their colours are improved by exposure to fumes of sulphur.

7. Sujani-weaving[1]:

Sujani-weaving is done on throw-shuttle pit loom. The warp is spread over the loom keeping the warp-beam at the farthest end from the weaver. The lease-rods are put in the warp spread over the weaving field. The craftsmen sit with weaver's beam over his thighs and legs in the pit over treadle. With the throw of the shuttle which begins to run with the weft pirn in the shuttle-box, the process of weaving starts. The movement of the foot paddles brings the healds up and down. At the first stroke, one set of threads, i.e., the threads of odd numbers will come up, while at the next stroke, the other set of threads of even numbers will come up. Thus alternate threads will go up

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1. Mainly based on the photographic collection of the Social Studies Division, Office of the Registrar General, India, New Delhi. See also R.K. Trivedi (ed.), Census of India, 1961, Vol.V, Part VII-A, Selected Crafts of Gujarat, "Sujani Weaving of Broach", 1967, pp.8-9.

and down respectively during the weaving. The movement of healds makes a square or floral design with green, blue or scarlet linings on borders and a design of small squares or flowers on corners. The reed is helpful in weaving because it distributes the threads evenly to avoid any disorder, leaves a clear way for the shuttle to run in the shuttle-box, combs the threads and gives the necessary pressure to the weft to set it tight across the warp. In the Sujani in which white and green threads are used in the warp and weft, the reverse side of green colour is white and vice-versa, due to the use of green and white yarn both in warp and weft. The woven-fabric is warpped on a square wooden piece called the weaver's beam.

As soon as weaving is completed, the Sujani is taken away from the loom, and the loose ends of the threads on both the ends are tied and knitted, and the piece is ready for sale.

II. DYEING AND PRINTING:

1. Dyeing[1]:

Yarn is dyed for the manufacture of carpets and woollen fabrics. Wool is dyed in fast colour; it is boiled in the colour for some hours and is then taken out and washed and dried in the sun. Silk is first cleaned by boiling in soap and water for about half an hour. It is then removed from the fire and when cold is washed in cold water. It is immediately thrown into the dye solution and is twirled in the bath until it is dyed to the required shade when it is wrung out and dried in the shade. On

1. Jamila Brij Bhushan, op.cit. pp.58-59. See also B.K. Roy Burman (ed.), Census of India, 1961, Part VII-A, Vol.I, Monograph No.3, "Textile Dyeing and Hand-printing in Madhya Pradesh", 1970, p.52.

the first day silk acquires a light shade deepening with every successive dipping. Cotton is first thoroughly washed and bleached and is then dyed, being later dipped in an acid bath to fix the colour. The acidity is produced by infusions of mango and tamarind. The cloth is then starched and beaten smooth with wooden clubs.

To obtain a design in yellow or red, the design is first drawn in hot bees wax with a soft steel wire brush and then the whole is dipped in red. The place where the wax penetrates the cloth is completely protected from the red dye, so that when it is afterwards boiled out the pattern appears in yellow on red. In the same way, by repeated waxings and dyeings, a very complicated design can be prepared in several colours.

In case of knot-dyeing (known as chunārī), the cloth has first to be washed. Then saline earth is mixed in cold water with the same quantity of castor oil and the cloth is soaked in the preparation at night and dried by day for 10 to 15 days successively. It is then washed in the river and exposed to air. When dried, figures are drawn in red chalk and the cloth is given to tyers who tie it on the lines of marking. The cloth is dampened and pressed over a block on which the design is worked out in raised nails which push up the material in the same pattern. The cloth is lifted off and the raised portion is caught by the forefinger and thumb nail of the girls who do the work.

The parts to be dyed yellow are dipped in a mixture of turmeric and butter milk and those to be dyed green are dipped

in a mixture of turmeric and indigo. Al, alum and cold water are mixed separately and allowed to stand until the Al has yielded its coloured properties. The two solutions are mixed and the cloth is allowed to soak in them for three days. In has now the colours green, red and yellow. If indigo is also required, the cloth is sent to the indigo dyer and is then washed in the river and allowed to dry. The pattern now has four colours with white edging where the cloth was held by thread.

2. Tie-dyeing[1]:

This is a very simple method of patterning materials like sārīs, searves, pillow-covers, table cloths, quilt covers, etc. Parts of the fabric are tied and dipped in dye. The tied up parts are not affected by the dye which present the required design on the material.

The method of transferring the designs to the material varies depending upon the traditional practice of a particular locality. Some prepare designs on a sheet of paper and holes are pinched on the paper to indicate spots. This is a convenient method, when a repetition of the design is required. The tying is done along with the line of dots. Some experienced craftsmen draw designs directly on the fabric with pencil by putting dots. A popular way of doing this is as follows :

The cloth is dampened and pressed over a block on which the design is worked in raised nails which push up the material. The raised parts are caught and tied. In another process the

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1. R.K. Trivedi (ed.), Census of India, 1961, Vol.V, Part VII-A, Selected Crafts of Gujarat, "Bandhanī or Tie and Dye Sārī of Jamnagar", pp.15-18. See,also B.K. Roy Burman, (ed.) Census of India, 1961, Vol.I, Part VII-A, op.cit.pp.56-57 and T.M. Abraham, op.cit. pp. 142-143.

design is drawn with the help of cardboard, brass or copper figures. In all the processes the same type of dye-stuff is used. It consists of a semi-liquid paste prepared by mixing red-ochere with proportionate quantity of water. If the design is to be printed, a wooden block containing the design is dipped in the paste and then stamped on the cloth. If the design to be drawn, the cloth is first folded appropriately and the tin or brass or copper figure is placed on it. Then a bamboo stick dipped in the red ochere is drawn against the margins of the figure.

After the designs have been marked, the cloth is given for tying. First the portion to be tied is pushed up by means of the little finger of the left hand (PL.XXV, Fig.4). This pushed up portion is pinched with the right hand allowing the left hand to be removed from under the cloth and then to take over to pinch from the right hand. As the raised portion remains pinched by the left hand, it is tied by the right hand three or four times with thread. The tying is slightly wider than the dot, spot or ring in the design, as the dye has a tendency to spread a little at both the ends and thereby reduces its thickness.

The technique of dyeing bandhanī involves repeated tying and dyeing in several colours. Those portions of the design which are to remain in their original colour are tied up first. The fabric is then dyed in that colour which is required for a further part of the design. After drying the fabric, the part of the

design which is required to retain that particular colour is tied up to protect it from subsequent colour dyes. The process is repeated according to the number of colours in the design (PL.XXVI, Fig.1). The dyeing operation is done by means of a piece of cloth or rag which is dipped in the colour solution and then smeared over the required portion. After these dyeing operations are over, the cloth is dipped in a solution of castor oil mixed with water. It is then allowed to dry. When the fabric has become dry, some of the tyings may be undone and fabric dipped into a dye of another colour. This is repeated for any number of colours. Another practice of dyeing the material in more colours is that only few of the threads are tied before the first dyeing, a few more before the second dyeing and so on. Certain parts of the dyed fabric are protected from being dyed again.

Great care is taken in working out colour schemes especially in fabrics which are to be dyed in more than one colour. The lightest colour is first dyed and the darkest last. For instance, the fabric is first put in a mixture of turmeric and butter milk. This dyes the fabric in yellow. Then this is dyed in green by putting it into turmeric and indigo. Al and alum are mixed together and the cloth is soaked and kept for three days. This gives red colour to the material. Now the fabric has been dyed in yellow, green and red. Again, the cloth is dyed in indigo. After dyeing, the cloth is washed in river water and dried.

So far as the tying of border portion of the fabric is concerned, it is tied according to a pre-determined design by passing the thread from one end to the other in a loose stitch method, so that the entire portion can be brought together by pulling the loose stitched thread from one end. The border portion is covered up by wrapping cloth rags and paper tightly with a cotton string so that colour may not spread while carrying out further processes of dyeing.

3. Dyeing and printing[1]:

The cloth used for dyeing and printing is thick and coarse. The printing takes place stage by stage. First of all the outlines of the design are marked by red ochere. Then the printing of the design by alum paste takes place. The printing of design by alum paste is carried on along the track laid down by the outline printer. After completion of alum printing, the cloth is allowed to dry. The same day the cloth is washed again to remove the excess of alum and other ingredients. It is then dried again.

Next, the cloth is dipped in a boiling water containing alizarin and some indigenous flowers and fruits (PL.XXVI, Fig.2). The flowers and fruits are used to prevent the colour of alizarin from spreading out of the design. After dyeing the cloth is squeezed and thrown on the ground. It is then dried without washing. The portions printed with alum paste turn red. Later it is dipped in cold water containing gum to give sizing effect.

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1. B.K. Roy Burman (ed.), Census of India, 1961, Vol.I, Part VII-A, op.cit. pp.52-54.

This dipping facilitates easy removal of wax which is later on applied to certain portions of the design as resist. The cloth is then dried.

Next stage is wax-printing. Wax is heated in an earthen pitcher. After it is hot, groundnut oil and alizarin are added it. This solution is kept overnight.

Next day it is again put on fire and is ready for being used for printing. The printing is done with special blocks with long handles. The blocks are dipped in the boiling wax and then stamped on the required portions of the cloth. Only those portions which are required to turn white and yellow in the ultimate stage are wax-printed so that the wax may act as a resist. After the designs are printed with solution of wax, fine sand is spread on the cloth by the printer in order that the print may dry up quickly.

The next stage in the processing of the cloth is indigo dyeing. The indigo dyeing is carried on for three days. Each day the cloth is dipped in the vat twice, i.e. in three days it is dipped in the vat six times. After every dip it is dried for oxidization of the absorbed indigo. After indigo dyeing, excepting the portion printed with wax, the remaining portions of the cloth turn into deep blue colour.

The cloth is then put in boiling water to remove the wax. The wax melts away and the cloth becomes free from it. After removing the wax, the cloth is washed by beating with a wooden stick and is then dried. The washing is done to make the white and red portions clearly visible.

The paste of gum and lime is then made and kept in a tray. In the usual way a block containing the design is dipped in this paste and stamped on the portions of the cloth which are to remain red after the next treatment which will be presently described.

The next treatment is dyeing in an extraction of pomegranate rinds. For this purpose the cloth is dipped in the solution twice. After this the cloth is dried and then it is again dipped in the solution. When dried, the portions of the cloth which previously remained white turn yellow and the portions which had earlier become deep blue under action of indigo dyeing turn almost black.

After this the cloth is subject to two more treatments. It is first dipped in water in which alum has been dissolved. After this it is dried and then dipped in boiling hot water. These treatments are considered to make the colours of the cloth fast.

After the last treatment the cloth is bundled in wet condition and allowed to remain so overnight. Next day it is washed in cold water and dried. It is then ready for sale.

4. Block-printing[1]:

In block-printing both bleached and unbleached cloths are used. If the printing is done on a bleached cloth, the cloth is first dipped in a mixture of finely powdered sheep dung and water in a large circular earthen pot sunk in the ground. The cloth is then trampled with feet, in order that the solution may be

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1. Jamila Brij Bhushan, op.cit. pp.61-62. See also T.M. Abraham, op.cit. pp.144-145.

uniformly absorbed by the cloth. The piece of cloth is left in the vessel overnight. Next morning it is passed to the washerman who washes it in clear water and, after drying, returns it to the tanner for bleaching. Castor oil and native alkali are mixed in the earthen pot. A small quantity of powered sheep dung is then thrown into the emulsion and water is added. The piece is dipped into this solution, well rubbed under the feet, and after being wrung out, is packed together in a piece of cloth and left on the ground for three or four days. On the fourth day, the piece is spread out in the sun and when perfectly dry, is again dipped in the solution, wrung out and exposed to the sun. This process is continued for ten or fifteen days. Bleaching is complete when the material becomes perfectly white. The cloth is now returned to the printer who makes a preparation of different kinds of colour ingredients which are first powdered and then ground in a grind-stone. These are kept ready and when required are thrown into a vessel containing enough water to dip the piece in. The piece is then plunged into the liquid, wrung out and dried in the sun.

The piece is then handed over to the clubman who spreads it on a block of wood embeded in the ground and beats it well with a club. The cloth is now ready for printing.

The cloth to be printed is stretched over a stout wooden bench covered with one or two dozen layers of some coarse cloth in order to serve as a pad. The printer sits before the bench with the block on his right hand (PL.XXVI, Fig.3). The block is pressed

on the flannel-screened bamboo frame covering the mouth of the vessel containing dye. The frame is so flexible that when the block is pressed, the cloth covering the face of the block touches the surface of the dye giving requisite dye coating on the face of the block. The block thus dampened with the dye is pressed over the cloth stretched on the wooden bench for printing. The whole surface of the cloth is printed in this way (PL.XXVI, Fig.4). Any patterns to be done in black are printed next. The cloth is then given to the tanner for washing in running water to take off the resist paste. The piece is next folded and clubbed smooth by clubman.

If the printing is done on unbleached cloth, the cloth is first washed, and the starch is removed completely. When dry, it is boiled in a copper vessel full of water and is again washed. The cloth is exposed to the sun, and when perfectly dry is ready for printing.

5. Kalamkāri Cloth-printing[1]:

Korā long cloth is the chief material over which the kalamkāri work is carried out. The cloth which is cut to the required sizes is soaked in a goṭ or buffalo dung solution in a big pot. The cloth is kept soaked throughout the night and the next morning it is cleaned in the flowing water of a river or canal and then dried on the water weeds. This bleaching process is repeated for four or five days when the cloth becomes spotless white.

1. A. Chandra Sekhar (ed.), Census of India, 1961, Vol.II, Andhra Pradesh, Part VII-A(1), 1964, Selected Crafts of Andhra Pradesh, "Kalamkāri Cloth Printing of Māsulipaṭnam", pp.57-60.

The next stage is the mordanting of the bleached cloth in myrobalan solution for taking up the block printing. Myrobalan solution is prepared by pounding myrobalan fruit and mixed in water, and the solution is filtered. In this solution buffalo milk is also added. The cloth is dipped into this solution and uniformly soaked and it is then dried. After this mordanting process, the cloth becomes yellowish in appearance.

The next stage is the printing of the outline of the designs determined. These outlines are printed either in black or in red or a combination of both. The printing blocks are engraved on teak wood pieces of convenient size.

After the block printing, the cloth is allowed to dry for about two or three days. It is necessary that it should be dried in sun for at least one day. It is then taken and cleaned in running water of a canal and is then dried on water weeds.

The next process is scalding which is intended to give permanent red colour to the outlines printed in red colour. It also helps to remove the gum and myrobalan juice from the cloth.

After the scalding process, the cloth has got to go through the bleaching process again so that excepting the areas where black and red outlines are printed, the rest of the area is rendered white.

The cloth is then starched before it is put through the next all important wax processes. The starch solution is taken out in a separate vessel and the cloth is soaked in it and then dried by spreading it on grass.

The cloth being starched is given for wax processing. First of all, the molten wax is kept ready and the workers sit round it with work benches and the starched outline printed cloth spread over it with the kalams in their hands. The kalam (pen) is dipped in the molten wax. The workers by exerting gentle pressure on the pad make the wax run down the points of the kalam and thus apply it to the cloth over all the required areas leaving aside those portions of the cloth which have to be dyed blue (PL. XXVII, Fig.1). The rest is all fully covered by the molten wax. The cloth covered by the molten wax is put in the sun for a little while till the wax film shows signs of melting. This is considered necessary so that any gaps not effectively covered by the kalam may be got automatically filled by this spreading of the wax film when it melts under the sun.

The wax-covered cloth is then dipped in blue dye solution and kept in it for a few minutes and then taken out and hung on a bamboo pole. The cloth has to be examined to see whether it has taken up the blue colour uniformly, if not, it should be dipped again. The cloth is then spread out resting it on pegs. Even at this stage if any spots are found on the cloth not adequately dyed, the blue dye solution can be applied on to the cloth by using a soft brush made up of just some dry grass blades.

The blue dyeing process having been finished, the cloth has now got to be relieved of the wax covering so that it may be put through the other dyeing process. For this purpose, the cloth is put in a big vessel and boiled. The molten wax comes out of

the cloth. The cloth is then removed and dried in order to take out all traces of wax on the cloth.

After the removal of the molten wax the cloth has got to be cleaned and bleached. Soap is used for the purpose of cleaning and bleaching.

After the cloth is cleaned subsequent to the blue dyeing, it has to be once again starched. While starching buffalo milk is also added, which is said to prevent the colours from spreading out when dyeing.

We have so far seen that the kalamkārī cloth has taken the outline designs in black and red and some interspaces dyed blue. The remaining colours that are usually applied to the kalamkārī designs are yellow and green. The yellow colouring material is vegetable dye obtained by boiling myrobalan flowers in water. This yellow colour is applied on to the kalamkārī cloth spread on the low work benches by means of a small kalam different from that used for waxing process and it is made up of a mere bamboo stick with felt tied in the middle. This kalam is dipped in the yellow colour and by exerting pressure on the felt the worker applies it wherever needed. The felt is also useful for blotting back any excess dye that may flow out of the kalam. The areas to be coloured green would have already been dyed blue in the indigo vat dyeing process. The yellow myrobalan colour is applied on those portions which are already dyed blue so that a green colour is evolved at the required places.

With the application of yellow colour, the dyeing processes are almost all complete. The colours so applied are all now made permanent by dipping the cloth in alum solution. The cloth is then dried in the sun for a day. The cloth is then dipped in hard water for about half an hour and the soaked in cow dung solution and wringed and tied up into a bundle and kept away for a night. Then it is washed in a river and dried over water weeds. The process is repeated another night. This gives the yellow colour brightness and polish which will otherwise be dull and patchy. Ultimately, the cloth is boiled and washed with soap. With this, the long and laborious process of bringing out the kalamkārī fabric is completed (PL.XXVII, Fig.2).

6. Kalamkārī Temple Cloth Painting[1]:

For kalamkārī temple cloth painting, thick korā cloth is used. The cloth is washed well in flowing water to remove the starch. No soap or other washing material is applied. The cloth is then soaked in myrobalan solution for a night and then dried. Sometimes buffalo milk is also added to the solution. It is said to prevent the spreading or clotting of colour when applied to the mordanted cloth.

A little way up from the pointed end a thick padding of felt or wool is made and tied round the stick with a string. When the pen is dipped in the black colour solution, the felt sponge absorbs and retains it. The artist draws the lines, making use

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1. A. Chandra Sekhar (ed.), Census of India, 1961, Vol.II, Andhra Pradesh, Part VII-A(1), 1964, Selected Crafts of Andhra Pradesh, "Kalamkārī Temple Cloth Painting of Kālahastī", pp.43-45.

of the pointed end of the pen (kalam), and by exerting a slight pressure on the sponge, the point is kept supplied with the required quantity of the dye. The expert artist sometimes does not even care to draw the intial designs with charcoal twigs. He draws the picture free hand straightway with the kalam (Pl.XXVII, Fig.3).

The artist draws the outline designs first with charcoal sticks made of tamarind twigs. Over these he draws the final lines with a black solution. The pen or kalam, which is used in drawing the outlines, consists of a bamboo stick with an end sharpened into a point with pen-knife.

After the outlines of the panels and the designs are drawn, the artist proceeds to give the cloth its background colour, namely, red. Besides the general background, some of the figures themselves may also have to be given a red or pink colour. Wherever red colour is needed on the cloth, the artist paints over those areas with an alum solution. The artist applies the solution to the cloth with the help of another type of kalam which is no more than a bamboo stick with felt or wool tied round the middle. The kalam is applied to the alum solution and felt body of the pen absorbes it. The artist applies a gentle pressure on the soaked felt which makes the solution run down the pen on to the brush end and is thus applied to the areas of the cloth wherever needed. The cloth is then washed in flowing water and dried in the sun prepatory to its being dyed red.

The cloth being dyed red, the figures in red colour are made prominent by a skilful process of 'differential dyeing',

i.e., the general background requiring deep red colour is put through the process of red colouring twice, i.e. application of alum solution and boiling in red dye. In respect of the figures which should take only light red, the application of alum is done only once at the subsequent stage before the cloth is put through the repeated dyeing process, so that the figures get only one light coating, thus rendering them distinct from the deep red of the background.

After the cloth is dyed in red, the general red colouring effect is bound to leave a stain on the other areas not covered by the alum solution, such as the human figures, etc. It is necessay that these areas should once again be restored to white so as to take the other colours which are meant to be applied over them. Therefore, the cloth undergoes a bleaching process. A solution of sheep's dung is prepared and the cloth is soaked in it overnight for 12 hours. The cloth is rinsed in flowing water in the morning and them spread on the moist river bed and water is sprinkled on it constantly. This bleaching process goes on for a week continuously - soaking the sheep dung solution at night and drying on the river bed during the day, at the end of which activity the cloth will retain the red colour only where planned i.e., in those areas originally covered by the alum solution, whilst the rest are rendered pure white.

The figures on the cloth are then coloured with yellow, blue, red and green, while some figures are left without any colouring at all. After the bleaching process, the cloth is

dipped in milk solution. This helps in applying the colour only to the areas required. After the bleaching process, the first colour to be painted is yellow. Especially the female figures are generally dyed yellow. In order to fix the yellow colour, the areas requiring it are first painted over with alum solution in which mango bark is soaked. The cloth is then washed in flowing water and dried. The application of blue or green colour is then undertaken. After the yellow colouring process and the washing and drying are completed, the cloth is once again soaked in the milk solution and is ready for the next colouring process. The blue colour is applied with the bamboo kalam wherever blue colour is needed. In those areas, where green is required the yelow dye colour will have been applied beforehand and over this blue is then applied, thus changing the yellow colour into a beautiful soft green. The cloth is finally washed in flowing water and then dried. The final product is ready (PL.XXVII,Fig.4).

III. EMBROIDERY:

The use of embroidery stitches is widely prevalent in India. As they are numerous in number and kind, a few important ones are described below :-

(i) Kutch embroidery[1]: Kutch embroiders use a hook. The thread is introduced from beneath the fabric which is kept tight by means of a wooden frame. Designs are large and flat, and sometimes small mirrors are added to give a touch of glamour. The outlines of borders are often embroidered with the laid stitch or with the couching or herringbone stitch. These are embroidered

1. T.M. Abraham, op.cit. p.139. See also Jamila Brij Bhushan, op.cit. p.52.

in colour with the gradual introduction of coloured threads in indicated veins, steams and various twists in the motif. Chain stitch or cross stitch is used as the basic stitch (PL.XXVIII, Fig.1).

(ii) Kathiawar embroidery[1]: In Kathiawar embroidery, the darning stitch, the herringbone, the interlaced and the chain stitches are used invariably. The darning stitch takes almost the place of satin stitch in elongated strokes covering the length of an inch. For covering triangular areas in designs or filling up large areas of squares, this is employed.

(iii) Kasuti[2]: This is an interesting type of embroidery found in the Karnāṭak districts. The designs are disposed in geometrical patterns so as to produce kaleidoscopic effect. The designs are planned, positions determined, and worked out by bits of silk. The Kasuti embroidery work is done on the cotton material only and covers the sārī from end to end. In the beginning, the embroider works out figures of elephants and ends with clusters of stars or even mere dots. Line and back stitch, ordinary running stitch, cross stitch, zigzag running stitch are the four varieties of stitches followed. The designs worked directly on the cotton material without using any canvas speaks out the accuracy of the craftsmen. Enormous strain and patience are required for counting the threads and for spacing the stitches.

(iv) Gold and silver embroidery[3]: Velvet, silk and cotton are suitable bases for gold and silver embroidery. A numerous

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1. Ibid.
2. T.M. Abraham, op.cit. p.140 and Jamila Brij Bhushan, op.cit. p.53.
3. T.M. Abraham, op.cit. p.141.

variety of threads are used in this kind of embroidery like thin strips of metal, thread covered with foil, spiral and tubes. A satin stitch is used for embroidering caps, borders and other articles of dress which require heavy type of embroidery. The chain stitch is employed on sārīs, the stem and running stitch for miscellaneous kind of work. For cushion covers and small carpets the laid stitch is suitable. The running stitch is best suited for finer and net like fabrics.

(v) Kānthā of Bengal[1]:

It is made of old and worn out pieces of cloth. At the outset broad pieces of cloth are carefully selected for the work. The fabrics after selection are washed and then the coloured borders are torn off from the sārīs and the pieces made into uniform size according to measurements. Then from out of these pieces are collected long threads both white and coloured, which will be used for the purpose of embroidery work. The sheets are then spread over a mat, one upon the other, flat and unwrinkled. The field is then filled in with fine quilting work by means of white threads, five or six strings of thread being put into the needle at one time. Stitching will then start from one end, lengthwise and go round the corners coming back to the starting point. By this first stitching a sort of border being secured, the borders are again stitched with threads of different colours such as yellow, red, blue, green and black. The surface is then

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1. Mainly based on personal observations. See also T.M. Abraham, op.cit. p.141 and K.K. Ganguli, "Kānthā - the Enchanted Wrap", Indian Folk-lore, Vol.I, No.II. 1958, pp.3-10.

compartmented into several segments with a central square with offsets on four sides. These compartments are then filled with the required designs in regular stitches probably following previously drawn thin lines in charcoal pencils. Generally speaking, the embroideries in the kānthās have a 'dorokhā' or obverse and reverse character. Ordinarily the designs appear distinctly on the obverse face.

(vi) Chambā Rumāls[1]:

Chambā Rumāls are worked out in simple stitch on both sides. Krishnalīlā, Rāsalīlā, Rāgas and Rāginīs are generally depicted in the Rumāls. The outlines are in dark silk and the whole work is done in the ordinary running stitch, the gaps on both sides being filled in. Figures, trees, flowers, and architectural designs are brought out in a simple but elegant way.

(vii) Embroidery of Kashmir[2]:

Of the embroidered fabrics of Kashmir kashidā is very famous. One outstanding feature of this embroidery is the fact that it is made with single threads giving a flat, formalised appearance to the design. The satin stitch has been adopted to cover large surfaces without pulling or puckering the cloth in any way. It has become a variation of the long and short stitch. The chain stitch is used only on inferior pieces and never on an expensive piece of work.

One kind of work done on shawls and scarves is 'rafugari' work. It is work of high quality worked in darning stitch. A

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1. T.M. Abraham, Ibid.
2. Jamila Brij Bhushan, op.cit. p.51.

really good piece of work with the design worked evenly on both sides takes about two months to finish.

Kashmir also produces fine Nāmdās, a sort of felt rug which because of its cheapness and colourful embroidery commands a ready market at home and abroad. These are generally embroidered with chain stitch and have the usual Kashmir floral motifs which are very bold because of the thickness of the materials.

(viii) Kāmdānī work[1]:

Kāmdānī is another form of gold embroidery for which Lucknow is famous. This is done with flattened silver or gilt wire on lighter materials. The needle is threaded with ordinary thread which is doubled, the two ends being secured with a knot. One end of the wire is pressed at the knotted end. It is pulled through the material with the wire being pressed down at every stitch. Small dots of overlapping satin stitch are produced. The effect of this work while being rich is also dainty. Sprays, flowers, stars and a host of other designs are produced, the loveliest and most shimmering effect being produced by the hāzārabuṭī in which 1000 small dots are made from one tolā of thread.

(ix) Zari-embroidery[2]:

The preliminary arrangements for zari embroidery are made by fixing ordinary coarse cloth on the kārchobe (rectangular wooden frame supported on two tripods) with the help of cotton-strings. The strings are used because they are studry and the

1. Jamila Brij Bhushan, op.cit. p.54.
2. P.K. Dixit (ed.), Census of India, 1961, Vol.VIII, Madhya Pradesh, Part VII-A, Handicrafts Survey Monograph No.1, "Zari Embroidery and Batwa Making of Bhopal", 1965, pp.14-15.

cloth has to be very tightly stretched so that not even minute folds are left in it. The ordinary coarse cloth serves as a base and a support for the velvet or the satin on which the design is to be worked. The velvet or the satin piece is then hand-stitched (called overcast stitch) on to the coarse cloth, care being taken to see that no fold is left as otherwise neat embroidery work is not possible.

The next stage is the selection of a design. After the design is selected it is traced on paper along the pencilled outline; small holes are pricked at close intervals so that we have the design in an outline of "pin-pricks". A thin needle is used for the purpose.

This having completed, a cloth dauber, which contains white chalk powder, is lightly rubbed on the design. If the cloth on which the design is to be made is white or grey-coloured, coloured chalk is used. With the help of a small pot containing a mixture of white chalk and gum and an ordinary pen with a very thin nib, the design is made pucca.

If a particular piece in a design is to be shown prominently, it may first be stuffed by ordinary white thread or a cotton piece and then over this, zari work is super-imposed. The result of this is that the stuffed or padded area achieves a three-diamensional effect. This is called "padding".

After the embroidery work is over, starch is applied on the reverse of the piece so that the stitches are held tightly together, i.e. stick to one another and to the cloth surface.

Along the border, the piece is then cut by scissors and removed from the kārchobe.

(x) Chikan embroidery[1]:

In chikan embroidery, the designs and patterns are printed on the cut fabric in fugitive dyes with the help of wooden blocks. The stitches are varied and the work depends for its excellence on their minuteness and evenness. 'Taipchi' is a simple daring stich used in the cheaper work; the variety called 'bukhia' is an inverted satin stitch in which the forms are merely outlined on the right side with minute stitches, while the thread accumulates on the wrong side making the work opaque. This, in the west, is known as 'shadow' work; a similar effect is produced by very minute applique called 'katao'; lace-like trellis (jālī) is made not by drawing out threads, but by a sort of very fine button-holing, pulling the threads aside. Raised work like tiny French knots is produced by a minute satin stitch. This embroidery is of supreme excellence comparable only with the best European laces to which it corresponds in purpose and effect.

7. Techniques of Gold and Silver Ornaments:

The technique of gold and silver ornaments appears to have been practised in India from very early times. The gold and silver ornaments found at Mohenjodaro tell us that ornaments of great beauty were in vogue in this country at least 5,000 years ago. Right from that period an unbroken continuity of evolution in the craftsmanship of India's artisans is discernible in ornaments.

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1. All India Handicrafts Board, Survey Report No.114, (1965), pp. 13-14, See also Jamila Brij Bhushan, op.cit. p.53.

The gold ear-rings from Mohenjodaro as a rule consist of a simple coil of wire with the ends slightly overlapping. Sometimes the wire is coiled round two or three times, making a circular band of about 0.15 inch wide and 0.75 inch in diameter. The wire of which they are made is a thin strip of metal that is hammered round[1]. The silver-earrings are also made of wire, roughtly bent round with the ends overlapping[2]. So far as the techniques of gold bracelets are concerned, it may be pointed out that they are all of sheet gold. The join of the gold wrapping is always on the inside of the bracelet; sometimes the edges overlapped and sometimes they are just allowed to meet. The ends of the bracelets are trimmed sharply off, apparently with a saw.[3] The silver bangles are also made exactly the same way as the gold bracelets. Their ends also have the sharp edges caused by the cutting of a saw.[4] Gold bracelets made of beads are also reported to be found at Mohenjodaro. As it appears, the beads are cast, and the spacers cut out of sheet metal. The terminals must have been beaten out of thin sheet gold, as there is no trace of soldered edges, and then pressed flat.[5]

During the fourth century B.C. soldering process appears to have played an important role in the manufacturing techniques of gold and silver ornaments. As for example, mention may be made of a gold necklace of beads found at Taxila[6]. The collars of the

1. Sir John Marshall, Mohenjodaro and the Indus Civilization, Vol. II, 1931, p.528, pl.CXLVIII, No.15.
2. Ibid. p.519.
3. Ibid, p.529, pl.CLI, Nos.2, 3, 9 and 10.
4. Ibid. p. 529, pl.CLXIV, a and b.
5. Ibid. p.522, pl. CXLIX, No.3.
6. Sir John Marshall, Taxila, Vol.III, 1951, pl.192, a = No.54.

beads are made separately and soldered on. The silver necklace of pendants found at Taxila[1] is also made in the same technique. The pendants are hollow and consist of a hemispherical drop with a T-shaped top which is decorated with incised lines and pierced with two holes. The back and front are made separately and soldered.

During the period between second century B.C. and first century A.D. repoussé work i.e. hammering into relief from reverse side seems to have been carried out mostly on gold ornaments like ear-stud, pendant, etc. For example, mention may be made of a pulley-shaped jasper ear-stud from Prabhās Pāṭan (Distt. Sorath). The ear-stud has a gold plate with a repoussé pattern[2]. Side by side, the technique of making ornaments from moulds was also prevalent. For instance, goldsmith's workshop in habitation site of Nāgārjunakoṇḍā (Distt. Guntur, Andhra Pradesh) has been traced along with oblong moulds with designs for ornaments - terracotta crucibles, a touchstone, an iron pestle, etc.[3]

The technique of making designs on gold ornaments in repoussé appears to have been continued in the Gupta period also. For example, mention may here be made of two gold ear-ornaments from Vaiśālī (Distt. Muzaffarpur, Bihar) which are decorated with artistic designs in repoussé[4]. From Bhiṭā also a unique disc of gold embossed with a human face has been recovered.[5] These

1. Ibid. Vol.III, pl.192, c - No.55.
2. Indian Archaeology - 1956-57 - A Review, p.17.
3. Ibid. 1959-60 - A Review, p.9, pl.IV- B and C.
4. Ibid. 1958-59 - A Review, p.12.
5. Archaeological Survey of India, Annual Report, 1911-12, p.103.

finds certainly throw light on the artistic talents and technical skill of the ancient Indian goldsmiths.

Apart from the archaeological finds, we have also some literary sources containing information about the technical skill of the ancient Indian jewellers. We often get references to Beluriya (Vaiḍūrya) cut into eight facets, well polished, and made perfect from all aspects.[1] Similar may have been the case with others. Probably gold ornaments (such as rings) were set with gems.[2] It appears that cutting gems and precious stones into various shapes and polishing them was specialised art by itself, and that setting them on ornaments was the work of the goldsmiths. In the Jātakas[3], the Suvaṇṇakāras and the Maṇikāras are mentioned as workers in precious metals and gems. The goldsmith (Suvaṇṇakāra) or his apprentice (Antevāsī) is often referred to as working at the furnace.[4] We also get descriptions of how gold used to be worked out. It was put in the furnace and blown; at times water was sprinkled, and at times it was left to be cooled[5]. The Gṛihya Sūtra[6] refers to the refining of gold in these words, "Then the goldsmith or his man heaps that sterling gold into a crucible and blows it (till it melts), melts it together, but does not run it out of the crucible. That sterling gold is then blown till it melts, it is melten but not flawless, it is not done with yet, its impurities are not yet strained off.

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1. Majjhima - Nikāya, II.17 and III. 121.
2. Jātaka IV. 233, 256 and V. 453.
3. V. 438-9 and VI. 276.
4. Majjhima - Nikāya, III. 243.
5. Ibid.
6. I. 231.

It is not pliable or workable nor glistening .... But a time comes, Bhikshus, when the goldsmith or his man blows that gold till it melts, melts it down and runs it out of the crucible. Then that gold is melted, molten, flawless, done with, its impurities strained off." After this process ornaments or other articles were made.[1] Pāṇini also refers to the work of the goldsmith, though he does not go into such detail as the Buddhist literature. But he informs us that the goldsmith had to perform the threefold task of making ornaments from new gold and silver, melting old ornaments to make new ones and the work of polishing[2]. Kauṭilya's Arthaśāstra gives a very interesting account of the methods adopted for assaying gold in olden times. Shamesastry's translation of the relevant portion of the Arthaśāstra is reproduced here. "When the streak of pure gold (made on touchstone) is of the colour of turmeric, it is termed suvarṇa. When from one to sixteen kākaṇis of gold in a suvarṇa (of sixteen māshakas) are replaced by from one to sixteen kākaṇis of copper, so that the copper is inseparably alloyed with the whole mass of the remaining quantity of the gold, the sixteen varieties (carats) of the standard of the purity of gold (shoḍaśavarṇakāḥ) will be obtained.

Having first made a streak with suvarṇa on a touchstone, then (by the side of the streak) a streak with a piece of the gold (to be compared with it) shall be made.

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1. Majjhima Nikāya III. 243; Gṛihya Sūtra I. 231, 236.
2. V.S. Agrawala, India as Known to Pāṇini, University of Lucknow, 1953, pp.234-35.

Whenever a uniform streak made on the even surface of a touchstone can be wiped off or swept away, or when the streak is due to the sprinkling of any glittering powder (gairika) by the nail on touchstone, then an attempt for deception can be inferred.

If, with the edge of the plam dipped in a solution of vermillion (jātiḻinguluka) or of sulphate of iron (pushpakāsīsa) in cow's urine, gold (suvarṇa) is touched, it becomes white."[1]

The ancient process of refining gold has also been discussed in Kauṭilya's Arthaśāstra. Shamasastry's translation of the relevant portion of the text is reproduced here." Impure gold is of whitish colour. It shall be fused with lead of four times the quantity of the impurity. When gold is rendered brittle owing to its contamination with lead, it shall be heated with dry cowdung (śushkapaṭala) when it splits into pieces owing to hardness, it shall be drenched (after heating) into oil mixed with cow-dung (taila-gomaye).

Mine gold which is brittle owing to its contamination with lead shall be heated wound round with cloth (pākapatrāṇikṛtvā); and hammered on a wooden anvil. Or it may be drenched in the mixture made of mushroom and Vajrakhaṇḍa (Antiquorum)"[2].

In the Kāmasūtra[3], rūparatnaparīkshā (testing and valuing of precious stones, etc.), dhāturvāda(combination and purification of metals) and maṇirāgakarajñānam (knowledge of precious stones, etc.),are included in the list of sixty-four arts. The Amarakoṣa[4]

1. Kauṭilya's Arthaśāstra, tr.by R. Shamasastry, Book II, Chap. XIII, 86.
2. Ibid.
3. Book I, Chap. III, p.23.
4. 10.32, p.232.

refers to scales and touch-stones used by the jewellers for weighing and testing the quality of stones and metals. In the Raghuvamsam[1] it is mentioned that gold was also tested in fire.

Some of the basic techniques followed by the ancient Indian jewellers are still practised in many parts of the country. A consolidated account of the techniques of gold and silver ornaments as followed by most of the present-day jewellers is presented below.[2]

(i) Assaying of gold and silver:

Before a gold or silver ornament is produced its assaying is very important. Rubbing the metal on touchstone is the most familiar method. It is a piece of soft black stone on which gold or silver leaves a mark, by the colour of which the quality of metal is judged. If there is a dark tinge in case of gold, it is of copper alloy and if there is a whitish mark it is of silver alloy. Sometimes a hole is bored in case of gold and is put in the furnace for sometime, after which the colour of the interior indicates its quality. Silver can be tested by its ring, or by cutting it. If it cuts soft, there is probably a zink alloy, if it cuts hard, copper alloy is indicated. Copper alloy shows a blackish tinge and yellowish colour shows zinc alloy.

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1. I, 10.

2. Mainly based on the photographic collection, Office of the Registrar General, India, New Delhi, as well as personal observations in the field. See also R.C. Pal Singh (ed.), Census of India 1961, Himachal Pradesh, Rural Craft Survey, Gold and Silver Ornaments, 1967, pp.61-73; R.K. Trivedi (ed.), Census of India, 1961, Vol.V-Part VII-A, Selected Crafts of Gujarat, "Traditional Silver Ornaments", pp.15-17; T.M. Abraham, Handicrafts in India, New Delhi, 1964, pp.107-114 and Jamila Brij Bhushan, Indian Jewellery, Ornaments and Decorative Designs, Bombay, 1955.

To test the purity of gold Sulphuric Acid is also used. The gold is first rubbed on a touchstone to make a streak on it. Then a drop of Sulphuric Acid is spread on the mark. In case of gold having more copper contents, the mark dissolves in the acid to the extent of impurities present. The mark becomes slightly dull. The acid does not remove the impression of pure gold. There is same action in silver. If a silver ornament is slightly filed at a place and touched with the acid no reaction would appear on the surface if the silver is pure. But on silver, with copper in it, the acid would show some brisk action. The spot changes into light or deep bluish colour in a relative proportion.

Purity of gold and silver is also tested by heating. When pure gold and silver are heated, they do not change colour. Because of other properties in the metals, these become oxide and the changed greyish colour would indicate the impurities present.

The last important method of testing gold or silver is by shrill tone of impure metals. If an ornament of impure gold or silver is thrown on a stone or on iron anvil a shrill and a vibrating sound comes. But in case of pure metals, the fall produces a hoarse sound. The vibrations will stop coming with the fall.

(ii) <u>Alloying</u>:

After the metal is tested, it is necessary to give a certain hardness to it to make it fit for ordinary wear and tear as well as for working intricate patterns and designs on it. In making gold ornaments, copper alloy is mixed, while in silver ornaments copper, zinc and sometimes cadmium alloy is mixed. The

proportion of alloy is not the same at all places and in all types of ornaments.

(iii) Refining of impure metals:

Refining of gold:

According to goldsmiths of today silver serves as a cleansing agent for purifying gold. The quantity of silver to be added in gold is equal or near about double of the gold to be refined. This is determined after ascertaining the impure contents of the metal.

Both the metals are melted together in a crucible and thoroughly mixed during their molten state. The alloy is then poured in a 'rezã'. The solid lump is beaten into a thin sheet from which small bits are cut with snips. Small bits in piecemeal are put in a clay crucible containing nitric acid. These bits may be divided into 3 or 4 parts. Each part is to be heated separately. Fusing process is continued for at least one and a half hour for every part of the metal bits. While heating dark brown smoke and fumes come. After about half an hour this stops. Then the crucible is taken out of the hearth and the acid is drained out steadily in some earthen jar. Care is always taken that particles of the powder which settle in the crucible may not come out while pouring the acid. Again some fresh acid is put in the crucible and heat is given for half an hour. After that the acid is again drained out carefully. Action is repeated for at least two or three times. After pouring out the acid, a sort of powder formed in the crucible is kept to dry separately.

Other parts of the metal-bits are repeatedly passed through the same process.

Now the dry powder is again put in a crucible. Borax powder is also mixed with it. The crucible is put in between the coals. Blast of air is given. Within a few minutes, the powder melts. It is poured in a 'rezā', where the liquid metal takes solid form. The lump received this way is of pure gold.

The silver, which was put into gold as a cleansing agent, can be extracted to some extent. A piece of copper may be thrown into the bits. Before doing this, two pints of water are added in the acid. Copper changes the mixture into a bluish colour. The water is drained out carefully. A layer of brown dust settles at the bottom. This is carefully taken out and dried. It is then heated in a crucible and this way silver is separated. Some amount of silver burns in the process and the quantity of silver received is half or less from the original amount. About one bottle of nitric acid is enough for the purpose.

Refining of silver:

Lead is used as an agent to purify silver. Firstly, the impurities are ascertained. If the contents of the base metal are about one third or one fourth of the fine metal, double the quantity of lead is required. If the impurities are less, an equal quantity of lead is sufficient for cleaning. According to Kauṭilya's Arthaśāstra, "impure silver shall be heated with lead of one-fourth the quantity of the impurity."[1]

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1. Kauṭilya's Arathaśāstra, op.cit. Book II, Chap.XIII, 86.

A groove is made on the floor. A thinck paste of wet clay or wet charcoal ash is given to it. First, the silver is put in the groove and burning charcoal is placed around it. The charcoal is given a blast of air from the blowing machine or from a skin blower. In a short time, when the silver melts, an equal quantity, or double the quantity of lead is added. The heating process continues for hours together till the lead is burnt to ashes. A yellowish smoke comes out from the burning of alloy. This way, the base metals in the silver burn. As soon as yellowish smoke stops coming, it shows that part of the lead has been burnt. The silver would look like red bright thin liquid. Then the live coals are removed. The groove is cooled down and the solid metal is taken out. This lump of metal is very rough and has a number of holes and dark spots. Some ash or clay particles get stuck to it. These are removed by striking it against the anvil. This silver is again melted in a crucible. Borax powder is added. Now the molten silver is poured in a 'rezā'. In this way, the solid metal can be used for making ornament of pure silver.

But the quality of silver obtained this way is not of the standard purity. Five to ten per cent of impurity may still be present. To bring the silver to the mark of flawless purity, a further process is carried on. The rod of silver obtained has to be beaten into a sheet. The sheet is cut into small pieces which are placed in a crucible containing nitric acid. The crucible is heated till the pieces are dissolved in the acid. This silver solution is poured in an earthen vessel containing

two pints of water. A piece of copper weighing about one and a half times the silver is put into this. The copper dissolves in water and turns the water blue. During this process, the silver gets separated and forms small dust like particles. A layer of these is formed at the bottom. Then the water is drained out steadily and the particles are removed. These particles are again melted in a crucible. In this way, silver is obtained in a mass form of the purest standard. Half a bottle of nitric acid is sufficient for cleaning 500 grams of silver.

(iv) Melting of old ornaments:

Close observations have shown that most of the jewellers convert old articles of jewellery into new. They put the old ornaments in a crucible for fusing. Before the old ornaments are put in a crucible for fusing, some powder of borax or nitre is put with them. This helps in melting the metal. Sometimes there are certain base properties such as bronze, brass or tin in silver and zinc in gold. Their presence may split up the metals. To prevent splitting up of metals borax powder is mixed. Live coals are placed all around the crucible containing old ornaments and a blast of air is given with a skin blower or blowing machine (PL.XXVIII, Fig.2). Then a stage would reach when some vapours would appear floating on the melted surface. This would be an indication to remove the crucible from the hearth. Molten metal is then poured into a mould. Before pouring in the metal it is smeared inside with some oily substances so that the hot lump of solid metal may come out from the mould with a slight blow. The molten metal thus poured into a mould takes

the shape of a rod or becomes round and solid which is easy to work on.

A smaller quantity of gold or silver is melted on asbestos paper or on a charcoal block. A blast of air is given through a curved blow pipe on a kerosene lump flame. This fuses the metal and soon turns it to a small ball.

(v) Annealing:

Gold or silver becomes hard by hammering or by drawing it often to make a wire out of it. In case the process is continued without re-heating the metal, it is likely to break. To prevent metals from becoming brittle, re-heating is done. This process of softening metals is called annealing. By doing this, metals become ductile and easier to work on.

While annealing a metal sheet or wire of any gauge, the goldsmiths heat them to a dull red in between the soft flame of charcoal. The air is supplied through the blow pipe and the metal is evenly heated (PL.XXVIII, Fig.3). When long thin wires require annealing they are first coiled and then tied with an iron wire so that these do not stretch. This is placed in the charcoal flame. Since the wire is very thin there is every likelihood of its melting at any spot with an unbalanced flow of blast. The next is judgment to know when to remove the metal from the forge after it has been evenly annealed. Heated metals are either left to cool or dipped in water, if the work is to be taken upon soon. But the artisans never dip the metal into water when it is red hot. If this is done the metal loses its softness to some extent. In case of large pieces metals are held

with spincers on one side and the hammering is taken. When the pieces are small the artisan holds one end of the mildly hot metal in one hand, while he shapes and works on it with the other. It is not necessary that the metal should be hammered soon after it looses redness. The annealed metal can be worked any time. There are no chances of its breaking or cracking. After thirty to forty gentle strokes, re-annealing becomes necessary to avoid cracks, splits or stresses. In case of drawing wires, these can be drawn from draw plates for about ten to fifteen times at eahh annealing.

(vi) Designing:

Annealed metals are shaped and designed step by step according to the ornament. It is clear from minute observations that the whole range of ornaments are mainly prepared either from a sheet or wire or pellets, or all together. While preparing ornaments several types of silver and gold sheets and wire of different gauges and dimensions are required. Sometimes the sheets are cut into circles, hexagons or octagons, rectangles, semicircles, squares, strips, triangles, or any other geometrical shape which may strike the artisan or as may be required for an ornament. These shapes are again worked to form various depressions, convex and concave impressions, ornamental and floral designs, twining creepers, zig-zag engravings and a number of other geometric designs. Bezel boxes are also cut at various places of an ornament where stones have to be set.

For designing these articles a number of implements are used. Metal and wooden moulds for carving of various depressions

are required to give a round shape to the sheet. For large depressions bossing hammers and mallets are used. For making small depressions a type of dapping tool is used. Engravings are done with pointed chisels, scrapers and scribers. For the embossing of metals a number of iron and bronze dies are used.

Wires of different thicknesses in round or half round shapes are prepared and then plaited, knitted or twisted according to the design. This wires are used for making chains, linear appliqued shapes and oval hook links. Thick wires are used to make strips by hammering and cutting them according to the design. In certain ornaments the setting of small pellets is done very artistically. These pellets are prepared from a thin wire which is cut into small bits of about 1/20th of an inch with special scissors. These small bits are placed in each groove of a specially prepared crucible, and become round pellets after melting.

(vii) Soldering process:

After shaping different pieces of an ornament, these are deftly joined together. This is sometimes done at the initial or middle stages and sometimes when the skeleton of an ornament is ready. Joining is done piecemeal or at a stretch.

The process of joining pieces of metals is interesting. First of all, the units of an ornament are cleaned well. They are tightly tied with an iron binding wire. The whole piece is properly coated with flux, having solder fragments firmly stuck to it, and finally dried well. The combined piece is then ready to be heated and soldered. If the piece is wet, drying and

soldering are done subsequently. Care is taken that it is warmed under a low heat. If heated abruptly, it is likely that bits of solder may fall. Artisans make sure that the piece has dried up and the bits of solder are sticking at thier original places. Then only the piece is brought to a soldering temperature. For this blow-pipes are used. This helps in throwing the heat at the right place. The artisan is careful that heat is not directed at the solder, otherwise, tiny bits of solder would melt and fall. The smallest flaw in soldering, particularly of minute and elaborate pieces, ruins the whole work. In that case, the work is taken up afresh. Great deftness is shown in carrying out the soldering job as there is a very minute difference in the melting temperatures of the metal and solder. Whatever be the processes involved, it is the correct judgment of an artisan, who knows what to do and when.

Simple articles can be soldered by putting them in charcoal without giving any support. A single soldering of simple articles like rings can be done on a big piece of charcoal or on an asbestos block held on a wooden board (PL.XXIX, Fig.1). The flame is produced from a kerosene lamp. Sometimes, when a piece is a delicate one and needs elaborate soldering at several places, the parts of the piece are placed quite close to each other on a tin plate having a thick coat of loam and then only the soldering process is taken up.

(viii) Repoussé process:

Repoussé work is the process of decorating a metal sheet of gold or silver by carving designs on the reverse side of it

and then turning the metal over and sharpening these designs on the face of it. The method by which the relief is raised, is by hammering the sheet with scribers, punches and impression pens. In most cases, the designs are drawn on metal sheets with a pencil. These are encased in a number of circular lines drawn with a compass. Sometimes the lines are simply straight with some regular harmony. When the design is drawn, engraving and embossing works are taken up with scribers, having different cuts and with dapping tools of various sizes (PL.XXIX, Fig.2). This type of work is carried out mostly on ornaments like bracelet, pendant, etc.

(ix) Stamped decoration:

The stamped decorations on ornaments are done by using steel and bell-metal dies. These have several patterns and shapes in them.

The sheet of metal is first placed on the die, and blows are given with the planishing hammer till the impression is received on the back of the metal. If the sheet is thin enough, a thick piece of lead is placed over the sheet and the hammering is done. Sometimes the sheet of gold, is as thin as a sheet of paper. To receive impression on so thin a sheet, cotton is used in place of lead. In this way, the thin sheet of silver or gold receives the design. This is a very ancient process in India, which is called 'embossing'. Before stamping out designs on the metal sheet annealing is done so that there will be no break-through of the metal while hammering.

(x) Filing and polishing of ornaments:

When the ornament is in the final stage it requires finishing and polishing. Before this is taken in hand, the ornament is properly filed and scrapped. This process removes edges, scratches, ball-up spots of solder and perfects the surfaces and curves according to the shape. The goldsmiths have a number of different needle files, some flat, round, half round, triangular, spear-shaped, convex-shaped and others with varying edges. Emery papers of different grades are used. The artisans do this work with care, otherwise over filing may spoil the whole piece. To achieve the best result they handle the file so that the first fore-finger rests on the top of it to control the pressure. While rubbing, pressure is applied mostly on forward strokes, except when the surface is smoothened, where file cuts are given both ways. The piece that is being filed is held in the left hand. Sometimes wrong filing produces traces on the articles. To prevent such traces and scratches, the artisans use abrasives of various grades, right from the coarse to the medium and fine ones. Finally emery paper of a fine quality is used. In this way scratches produced by the use of rough abrasives are removed.

The filing process, makes the ornament ready for polishing and giving final touches. An especially prepared solution, red sand and soap nuts are used for washing and polishing ornaments. Polishing is also done with the help of sodium sulphate, alum salt, sulphuric acid, etc. mixed in required proportion.

Ornaments are first boiled in this solution, washed with clean water and then brushed with a glass brush. Wire brushes are also used for washing and polishing. In carved ornaments, only hand-polishing is done with the help of soap-nut water. To remove the wetness, ornament is put in lime-powder or saw-dust. Polishing powder which is the mixture of acid, wax, etc., is also used. This type of polish is known as 'buff-polish'. After all these processes are over, the ornament becomes ready.

The survey of the techniques involved in the manufacturing process of gold and silver ornaments in India shows that the basic techniques followed by the craftsmen of all ages are more or less typical and conservative, and their age-old characteristics are still prevalent in many examples produced by the present-day jewellers who may have transformed some traditional skills to industrial skills under the impact of modernisation.

The survey of the technology of some of the important traditional crafts of India, therefore, reveals the fact that though the craftsmen have adopted new techniques in their production methods, their basic ideas in the field of technology have almost remained unchanged throughout the ages. This sort of adaptability, on the part of the Indian craftsmen, has been greatly responsible for the preservation of the basic unity of the material culture of traditional India.

C H A P T E R - V.

ROLE OF CRAFTS AND CRAFTSMEN.

Problems and Suggestions - Institutions and the Crafts - Role of Craft Museums.

Pages : 310 - 343.

CHAPTER - V

1. ROLE OF CRAFTS AND CRAFTSMEN.

Our craft traditions are becoming extinct, sadly comments every scholar seriously concerned with the study of Indian crafts as they reveal the material and non-material culture patterns of this country. For centuries together they have provided us with the glow of local and national pride, and at the same time have ensured employment opportunities to innumerable persons. Unfortunately, foreign rule and its imperialistic policies, the downfall of princely states and their rulers (who were the chief patrons of the crafts) and the coming of the machine age have combined to bring about an almost complete paralysis of our centuries old craft traditions.

To-day, as an independent nation India has to shoulder the heavy responsibility of revising those traditions which formerly gave her such pride of place in the world's arts and crafts. No less significant is the responsibility of providing social security to craftsmen, who, as per tradition, are engaged in these crafts in spite of facing abject proverty, disgustingly low social status, and a frustrating stage of the craft economy despite the fact that several of these crafts possess rich export potential and have low capital requirements.

There is no denying the fact that craft is the historical parent of modern industry and the craftsman is the immediate

predecessor to the modern industrial technologist. In the pre-industrial age, crafts formed an integral part of the nation's economy. The degree of development of crafts was, however, dependent on the development of agriculture. Wherever agriculture flourished, crafts also flourished with it. But our crafts were not mere adjuncts to agriculture. Though they formed the two wings of the nation's economy, they were always combined and interdependent. The one could not go without the other. But with the growth of the factory system of production, mechanised industries pushed our crafts from the high place they had in the economy of our country.

India is to-day heading towards vast industrial and agricultural development. It is justifiably hoped that our crafts will play a significant role in building up a stabler national economy. In addition to providing employment to lakhs of artisans, and occupation to many traders, dealers and exporters they uphold India's age-old tradition and reputation for excellent craftsmanship. It is a fact that there is not yet a wide recognition of the economic potentialities of our crafts, but on the basis of assessment of internal consumption and foreign export of craft products it is apparent that our crafts still have an important place in the rural and urban economy of the country. The total astimated annual production of crafts in the country comes to about Rs.333 crores out of which about Rs.95 crores worth of craft products were exported during the year 1969-70[1]. This assessment

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1. Information received from the Office of the All India Handicrafts Board, R.K. Puram, New Delhi-22.

appears to have been based on production in craft centres and sales records of various agencies, and does not include the volume that goes under home consumption.

Again from the social points of view both industries and crafts are essential for the satisfaction of human wants. Industries satisfy economic wants which form the greater part of human wants mainly from the utility point of view. Crafts satisfy not only the economic wants, but also the aesthetic cravings of human heart. The role of crafts is, therefore, a social one and distinct from that of major industries. Moreover, industries cannot intrude into the proper realm of crafts. A carved ivory piece with an individual stamp is beyond the achievement of the best of factories.

In India unemployment has been a serious national problem. Nearly 85 per cent of the country's population live in the villages and 75 per cent mainly depend on agriculture for their livelihood. Moreover, there remains a large section of the country's labour force which cannot be absorbed in industries. The creation for local employment through crafts will provide additional employment for millions who are unemployed.

Crafts not only provide employment opportunities to millions of people, but also help in relieving the budgetary strains of millions of poor families. Many are the crafts that can profitably employ all except tiny tots and totally disabled perons. As most of the crafts are easy to learn, and require only little investments, it would not be beyond the means of most persons.

Women belonging to higher social groups may take to such crafts as emboridery and needle work. Women of the lower income groups can practise such crafts as basket-making and mat-weaving. There are various crafts which are eminently suited to children. They can learn through the play of craft. Moreover, crafts would engender in them sense of dignity of labour which may stand them in good stead in later life. In fact crafts can help the children in the formation of their character.

From the point of view of the attainment of a balanced economy, crafts may also hold a pivotal position. It has been observed that there is disguised unemployment among the agricultural workers who do not have sufficient works during the slack seasons. Large industries cannot by their very nature provide the alternative employment which peasants require. The best suitable alternative employment for them would be crafts.

Crafts not only contribute a lot to the sustained development of the country's rural economy, but also form a prominent element in the cultural unity of the people. They flourish in rural life, but function as connecting link between the various constituents of a society. They are also an effective medium of cultural contacts between nations. These artistic objects carry the minds of a people to distant lands, and do a sort of propaganda for the rich heritage of our culture. Finally, "craft treasures give a panoramic view of the various aspects of life of the generations that lived through centuries - a glimpse into the cultural life of the people"[1]

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1. T.M. Abraham, Handicrafts in India, New Delhi, 1964, p.41.

2. PROBLEMS AND SUGGESTIONS:[1]

(i) Design Development:

With a view to procuring an extensive market for crafts, designs should be improved according to the tastes of the consumers. In some of the crafts there is ample scope for introducing new designs which may widen the foreign as well as the domestic markets. The regional Design Development Centres in the States may be helpful in this regard. Further, the designs which are often over elaborate may also be simplified so as to economise the cost of production. This requires minute study, and perhaps experimentation in this regard may be carried out at the Design Centres. As an immediate measure some of the artisans practising different crafts may be deputed to the Design Centres for undergoing refreshers training course in this direction.

(ii) Marketing:

Some of the crafts do not seem to have captured much of the internal market; there seems to be some scope for these crafts in the foreign countries like the U.S.A., U.K. etc. Prospects and possibilities of producing such articles for export need to be explored, and the producers need to develop foreign contacts. The

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1. Based on personal observations and Survey Reports Nos.8(1960); 11, 26, 31, 75 and 76 (1961); 20, 24, 25, 35 and 58 (1962); 30 and 51 (1963); 59, 61-65, 80, 84-85, 87-88 and 90 (1964); 33, 36, 42, 68-70 (1965); 43, 92, 96 and 106 (1966); 47 and 72 (1967) and 108 and 114 (1968) published by the All India Handicrafts Board, New Delhi as well as the synopsis of the observations and recommendations made at the Seventh All India Handicrafts Marketing Conference held at Vigyan Bhawan, New Delhi, on November 17, 18 and 19, 1971.

State Trading Corporation (STC) should also place orders with the dealers in order to give an impetus to the craftsmen's export efforts.

Some of the crafts are export-oriented. It is considered necessary to provide a guidance to the dealers in such vital matter as export markets and the type of articles required by the importing countries. The Handicrafts and Handloom Corporation of India Ltd. can render great assistance to the dealers in all such matters, and extend facilities of finance to exporting dealers against firm export orders.

For the promotion of sale of crafts the State Government emporia should also give preference to the Co-operative Societies while making purchases of crafts. It can help better by making outright purchases from the Co-operative Societies. It should also approach emporia of other states and important cities for sale of crafts produced in a particular State. This will greatly facilitate marketing of crafts in other States.

In view of the large export potentialities of some of the crafts like textiles, jewellery, ivory, metal images, etc. it is necessary to have an Association consisting of artisans, dealers, and officials of the Government Emporium to look after the general interest of these crafts and to make organised drive for exports. This Association can take guidance from the Handicrafts and Handloom Export Corporation of India Ltd. and co-ordinate its activities in rendering help to the export trade in such important matters as pre-inspection of export goods, know-how about export

markets and determining export potentials. The Association can also look into the difficulties of transport during rainy season, and make necessary arrangements with the concerned authorities for concessional air freights.

In order that the demand for the craft objects may be on the increase, efforts may be made to obtain views of the different emporia and depots selling them for any improvement in the quality, size, etc. A sort of marketing analysis and research may be necessary in this behalf so that the crafts can be further developed and the scope extended for producing different articles.

(iii) Co-operative Societies:

It has been observed that in many places the Co-operative Societies are not functioning efficiently. Sometimes they are seen to be looked after by part-time Secretaries. This arrangement seems to have a deterrent effects on the commercial aspect of the Societies, and therefore, full-time Secretaries assisted by Accountants should be appointed to devote their attention fully for the better management of the Societies. Moreover, the Co-operative Societies should be organised on such a sound footing so that they can give a lead in the manufacture of quality and standard products and make the craftsmen co-operative minded.

The Co-operative Societies generally take up the supply of raw-materials, purchase of finished goods from the artisans, marketing and provision of credits. For this purpose, the Co-operative Societies should be given adequate financial assistance by the State Governments. This may result in ensuring a better deal to the craftsmen and lessening the domination of the dealer-

financier over them.

It has been observed that in many places the craftsmen have no Co-operative Society. As a result they suffer for want of adequate quantity of raw-materials, finance, marketing facilities, etc. When once the Co-operative Society is formed, further developmental measures such as usual faculties of loans, grants, subsidies, marketing, design assistance, mechanisation and equitable distribution of products can be effectively channeled.

It has also been observed that the craftsmen are highly dependent on dealers for the supply of finance and for marketing their products. This results in exploitation of the craftsmen by the dealers. It is suggested that the Co-operative Societies should be given adequate assistance in respect of share capital, working capital, subsidy on managerial and supervisory staff so that the exploitation of the dealers is stopped.

(iv) Finance:

Finance is also a disconcerting bottleneck of some of the crafts. The interest charged by the private institutions like Sania, dealer is amazingly exhorbitant, as such the small artisans can illafford to go in for credit available from these sources. It is vital that adequate credit facilities are extended to these craftsmen to enable them to free themselves from the hands of trader-financier. Besides, facilities of liberalised credit given by a few banks such as the State Bank of India, the Bank of Baroda, and the Punjab National Bank should also be extended to these craftsmen. The District Industries Officers may also assess the loan requirements of the craftsmen and

provide adequate loan assistance. Sometimes the traders lend money to the craftsmen in the form of advances for purposes of purchasing raw materials. When the finished products are delivered to the dealers, the advances are adjusted against the payment due to them. Although no outward strained relations between the manufacturer and the dealer are marked, the fact remains that the artisans are exploited by the dealers due to former's weak financial position. It is suggested that the Co-operative Societies should be more strengthened in order to reduce significantly the exploitation of artisans by the dealers.

Some of the craft items such as ivory, jewellery and ornaments, metal images, etc. are costly. For the development of these crafts, it is necessary that enough working capital is made available to the craftsmen. The Industries Department should also take steps to advance credit to the craftsmen against stock of raw materials and finished goods. This will greatly reduce the dependence of craftsmen on dealers for the supply of raw materials and work, and will ensure fair returns to the artisans.

(v) Supply of raw-materials:

In many places it has been found that the craftsmen do not get adequate supply of raw materials. The State Industries Departments should make suitable arrangements so that raw materials at concessional rates on the basis of instalment payment may be supplied to the craftsmen.

(vi) Workshop-cum-residential accommodation:

In some of the cities and towns the craftsmen living in a particular locality require better workshop-cum-residential

accommodation. It is suggested that co-operative housing colonies be constructed for these craftsmen. They may be provided workshop-cum-residential accommodation on hire purchase basis. Moreover, these colonies should have all the necessary facilities of water, electricity and other sanitary arrangements.

(vii) Skilled labour and employment opportunities:

There are some crafts which require more skilled artisans for their development. Young men with flair for these crafts from outside the community should be trained by the master craftsmen, so that the production can easily be more without any marketing bottleneck.

It has also been observed that many craftsmen suffer from shortage of skilled labour during the busy season when they receive bulk orders from the dealers, whereas during the slack season, the craftsmen are without continuous employment. It is suggested that the State Government Emporiums and the Co-operative Marketing Agencies should get standard articles of most popular items produced for their stocks during the slack season so as to provide regular employment to the craftsmen.

(viii) Adoption of mechanised techniques:

Most of the craftsmen use traditional tools and appliances, and as a result they have a low turn-over. Every endeavour should, therefore, be made to induce the craftsmen to shift over to better tools and equipments which will help in eliminating long strenous hours of work and low productivity. Arrangements should also be made even to supply these tools on hire-purchase basis to them. Moreover, there is every possibility

of mechanising certain processes of crafts without sacrificing the artistic beauty. The Central Handicrafts Development Centre of the All India Handicrafts Board may explore the possibilities of designing such machinaries locally. To facilitate such efforts the State Industries Departments should also step in, and set up Common Facility Workshops where facilities in the use of improved tools and appliances are easily available to the craftsmen.

(ix) Competition:

There are some crafts which have to face a formidable competition with the machine-made products. As for example, mention may here be made of the hand-printed sārīs and dress materials which usually face a formidable competition with the mill-made sārīs and dress materials. The mills with their very large capital resources, rationalised production process based on latest technical know-how, marketing research, highly paid commercial designers are able to produce prints on the cloth of their own manufacture at rates cheaper than those by the hand-printers. Since the competition is bound to continue, the future of such crafts can only be assured through emphasis on new designs and vigorous publicity.

(x) Transport facilities:

In some places the craftsmen face difficulties in transportation and communication specially during the rainy season. Steps should be taken to provide transport facilities to these craftsmen.

(xi) Training facilities:

In some places it is found that the craftsmen require adequate training. It is suggested that training of craftsmen under master craftsmen at centres known for the same need be undertaken. The training programmes organised by the All India Handicrafts Board and the State Governments should also be expanded.

(xii) Literacy of the craftsmen:

It has been observed that many a craftsman are either illiterate or do not have proper education. The Adult Education Centres set up by the State Governments should be specially instructed to teach these craftsmen.

(xiii) Publicity:

There are some less known crafts in the country which require adequate publicity. For an effective publicity, examples of these crafts should be displayed in exhibitions held in district and state levels. Publicity of these crafts may also be made through press, advertisements, hand-bills, illustrated brochures, etc.

(xiv) Living conditions of the craftsmen:

It has been observed that most of the artisans either in the villages or in the towns live in congested areas or colonies. They live in thatched huts put by themselves. These huts are generally of mud walls and sloping tile or grass roofs. It is also found that a good number of artisans specially in the towns and cities live in rented accommodation in the slums. Because of their inability to pay high rents, the area of

accommodation is generally small. Of course, these are pucca constructions though their present condition is rather dilapidated. Situated in narrow lanes, the houses are dark and dingy. There is no sanitation worth the name. The craftsmen live under constant danger to their health. In a majority of these types of houses there is no water supply and electricity.

Whether in the villages or in the towns, the accommodation of the craftsmen serves both for living and working. In this arrangement, there is always the risk of damaging the piece of work in hand.

With a view to improving the living conditions of the millions of artisans, the State Governments should provide cheap living and working accommodation with all attendant conveniences and facilities to them.

(xv) Medical assistance to the craftsmen:

It has been observed that most of the craftsmen are never able to spare any funds out of their poor earnings for medical care. Whenever an illness attacks a craftsman, it aggravates his misery and privation by snatching work-days on the one hand and by necessitating unprovided expenditure on the other. For health of the craftsmen and relief from illness the State Governments should open free dispensaries with adequate qualified medical staff for them in areas of their concentration.

3. INSTITUTIONS AND THE CRAFTS:

In ancient India royal patronage of crafts[1] provided the incentive to production of things of artistic beauty and

1. The recapitulation of the historical background of royal patronage of crafts in different ages is mainly based on the findings of Chapters I, II and III.

charm. The early Buddhist texts refer to royal patronage of crafts. During this period the craftsmen were not only employed in the royal courts, but also played an important role in the socio-economic life of the people.

During the Mauryan period the craftsmen were regarded as being in a special manner devoted to the royal service and they were subject to special supervision. In the Maurya State crafts were given so much importance that it was necessary to employ Civil Officers to superintend the occupations of the craftsmen. The Arthaśāstra of Kauṭilya also refers to the royal patronage of crafts. Of the six bodies of the Municipal Board of Pāṭaliputra, the very first was entrusted with the superintendence of everything relating to the industrial arts.

The Śuṅga rulers also patronised arts and crafts. Beautiful statues, columes and cascades began to decorate the royal palaces and courts.

The Kuṣāṇas were also great patrons of arts and crafts. They took much pleasure in encouraging them. Among the Kuṣāṇa kings, Kaniṣka showed more keenness in the development of crafts. He not only employed craftsmen from India in large numbers, but also brought craftsmen from his motherland.

During the Classical era of the Guptas, crafts like metal works, pottery, jewellery, etc. flourished under the state patronage. The Gupta emperors especially Chandragupta and Samudragupta promoted the crafts.

During the Post-Gupta and early mediaeval periods crafts flourished under the state patronage. The techr

various forms of arts and crafts specially of metal and stone works developed so much that they spread in the neighbouring countries like Jāvā, Sumātrā, Borneo, Siam, Singapore, Burma, Indonesia and Mālaya.

Crafts were in a flourishing state during the palmy days of Vijaynagar kingdom. The craftsmen's lives were happy, because crafts were generously encouraged by royalty.

The Mughals were also great patrons of arts and crafts. In the annals of the period we come across several examples of Emperors' support to crafts and trade in the country. There were Kārkhānās (factories) for making various articles to be used by the court, the army, and the nobles. Imperial workshops were in Lahore, Agra, Fatehpur, Ahamdabad, Gujarat and Burhanpur. All kinds of weaving and silk spinning were brought to perfection, and the imperial workshops furnished all those stuffs which were made in other countries. In the great enterprise of Akbar, Jehangir and Shahajahan in building palaces, forts, tombs and mosques the craftsmen found their best opportunity to express their dreams in marble, mosaic and red sand-stone.

With the coming of the British our crafts were thrown off their feet. Under the British, industrial capitalism was projected into India, and it came into conflict with the time-old economic system of the country. As it had the support of the ruling power, it always gained the upper hand. Here began the general economic decline, and with that our crafts began their downward slide. Another important cause for the decline

of Indian crafts was the growth of the factory system of mass production. The crafts products could not compete in the market with the factory goods. Moreover, there emerged landlordism which also affected Indian crafts. The landlords and the rich classes preferred articles of foreign make to native products for social and political reasons. The break up of the joint family system also affected many crafts. Under the old system, the family was the heart of economic production. Each village had certain families plying for generations some traditional crafts. As all joint families, the families of craftsmen also were based on collective labour, common ownership, and common income and expenditure. With the village falling into the orbit of the money economy, and with the growth of individualism, the general tendency was to work for money for oneself. Young men began to leave the traditional occupations of their families, and moved to towns to take up industrial jobs. Deserted by young men, various crafts declined. Some crafts, which were the specialities of certain families when thus left out, vanished altogether from existence.

The divesting of caste of its economic functions also had its adverse impact on crafts. Each caste had followed certain traditional occupations, religious, social and economic. The new system introduced by the British stripped many castes of economic functions. Within the framework of the self-sufficient village community, certain crafts were the traditional trades of the members of certain castes. They were indispensable

for the well being of the community, and the community was bound to support them. But with the shattering of subsistence economy, many of these castes of craftsmen lost their functional basis. Now in the new set up, the village could manage without their services because the factories supplied cheaper articles in abundance. Shorn of their economic functions, craftsmen took to occupations other than the traditional ones.

The disappearance of the Indian Courts under whose patronage many crafts had flourished was another important cause for the decline of our crafts. It has already been noted that during the ancient and mediaeval periods crafts flourished under the royal patronage. There was no need to struggle for a market. The craftsmen were at liberty to put any amount of labour in a product for its artistic perfection. The competition was not for a market as it is today, but for artistic excellence. That is why under the state patronage there flourished a wide range of crafts. But with the abolition of courts, the crafts fell on evil days. Moreover, the British rule brought about a change in the tastes and fashions of the wealthy people. Western articles of domestic use began to be widely accepted as the hall mark of culture. There arose a craze for things western. This caused a great shrinkage in the demand for traditional craft products.

Another factor that contributed to the decay of our age-old crafts was the trade and industrial policy in India under the British. British was the first country in the world to have the Industrial Revolution, and as a result she became the home of

factories. She no longer required the products of our rural crafts. She only wanted raw-materials for her industries and markets for her finished products. Britain found in our crafts an enemy to her industries. The lack of patronage ultimately resulted in the decline of our age-old crafts.

After independence, the welfare State of India has, however, taken steps to develop the crafts. In view of the facts that our crafts have had a good reception in foreign markets, and can contribute a lot to the sustained development of the country's rural economy, and form a prominent element in the socio-cultural unity of the people, a few institutions and organisations have come up for their promotion. Of the institutions engaged in the development of crafts, special mention may be made of the State Industries Departments, the Co-operative Societies, the Handicrafts and Handlooms Export Corporation of India Limited and the All India Handicrafts Board which directly or indirectly exercise a dominant influence on the functioning of the crafts, and are responsible to a great extent for the present state and future development of crafts in the country.

State Industries Departments[1].

The State Industries Departments look after the overall functioning and requirements of the crafts in the states and cater to meet the basic raw material requirements of the craft units. They also work for the general promotion of the crafts and provide hire-purchase facilities and loans to craft units.

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1. Mainly based on personal observations. See also Census of India 1961, Vol.XIX, Part VII(i), pp.175-176; Census of India, 1961, Vol.I, Part VII-A, "Cire-Perdue Casting in Swamimalai", Chapter VIII, p.47.

The Inspectors of the shops and establishments pay regular visits to the craft units and keep a close touch on their functioning and requirements. Besides, the State Industries Departments have set up emporiums with a view to give visual display and commercial publicity to the craft products of the states. These emporiums maintain standing exhibitions of States' craft products and also have sales counters.

The State Industries Departments have also Training-cum-Servicing Centres with two-fold purposes, viz. imparting training to the craftsmen for improving the processes of manufacture and making available to the craftsmen services of improved tools and appliances which may be beyond the means of individual craftsmen to acquire.

Co-operative Societies[1]

The Co-operative Societies are the local bodies of the craftsmen which look after and promote their mutual interests. The main tasks of these societies are to procure works and raw materials for the members and to market their finished products. The societies receive orders from various dealers and also maintain the stock of finished products for sale. Besides these, the societies also undertake the following activities :-

(a) Giving technical guidance to the craftsmen.

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1. Mainly based on personal observations. See also B.K. Roy Burman, (ed.), Census of India, 1961, Vol.I, Part VII-A (III), "Textile Dyeing and Hand-printing in Madhya Pradesh", pp.88-89; Census of India, 1961 Vol.I, Part VII-A(4) op.cit. pp.45-47, and Baldev Raj (ed.), Census of India, 1961, Vol.XIX, Part VII-(1), "Brass and Copper Artwares of Delhi", p.25.

(b) Providing tools and equipments, and workshop facilities to the needy craftsmen.

(c) Giving assistance by way of finance and raw materials to the members.

(d) Introducing the craftsmen to the new designs supplied by the State Industries Departments.

Handicrafts and Handloom Export Corporation of India, Ltd. 1.

The Handicrafts and Handloom Exports Corporation of India Ltd. was set up in 1958 with the primary object of promoting the Indian crafts at home and developing foreign markets. The Corporation is designed to enable the crafts manufacturers to procure raw materials at reasonable prices; to give loans to exporters and producers and guide them regarding the latest market trends. In order to give visual displays of exportable crafts, the Corporation has opened crafts sample rooms at home and abraad. These sample rooms are supposed to be equipped with a complete range of representative samples of exportable Indian crafts which would provide a ready guide to visiting buyers.

All India Handicrafts Board [2]

The All India Handicrafts Board was constituted in 1952 under the chairmanship of Smt. Kamaladevi Chattopadhyay to study

1. Information received from the All India Handicrafts Board, R.K. Puram, New Delhi. See also Census of India, 1961, Vol. XIX, Part VII (1), op.cit. pp.176-177.

2. Information received from the All India Handicrafts Board, R.K. Puram, New Delhi. See also the pamphlet published by the All India Handicrafts Board, New Delhi.

the problems confronting the development and the progressof handicrafts, to advise the Government generally on the solution of these problems, and in particular, to improve and develop production techniques, evolve new designs to suit changing tastes and conditions, and improve the marketing of handicrafts in India and abroad.

The Board is also required, as a technical body, to advise the Government on grants and loans to be given to State Governments, private organisations and institutions for financing activities necessary for the development and improvement of crafts.

The Board assists State Governments by way of financial and technical assistance for the development of crafts. In the matter of financial assistance to be given to State Governments, private institutions and registered organisations, the Government of India acts on the advice of the Handicrafts Board.

The services rendered by the Board for the development of crafts in the country are as follows :-

(i) Survey of crafts : Surveys of crafts in different areas are undertaken by the Planning and Research Section of the Board. Foreign experts are invited from time to time to visit the centres and give suggestions for the improvement of crafts in these areas. The help of Universities and other institutions is also enlisted in conducting these surveys. The Board publishes a Statistical Bulletin giving the location of crafts, number of craftsmen employed in them, etc. etc.

(ii) Revival of crafts and introduction of improved techniques:

The Board has set up Pilot Centres in various parts of the

country noted for their artistic products. These centres are interested in the task of reviving crafts which have fallen into decay and introducing improved techniques for the betterment of the same.

(iii) Research : Research in improved techniques of production is also being carried on by the Board. This includes research in tools and techniques of production. Here also the Board gets help from foreign experts.

(iv) Training: The Board has Training-cum-Production Centres where the people are given training in a particular craft. Financial assistance is also given to various institutions such as the Handicrafts Teachers Training College, Bombay, Regional Handicraft Training Centre, Hyderabad, Vocational Training Centre, Dharwar, etc. for imparting training in crafts. The Board also organises a training course in Handicrafts Salesmanship for Organisers, Salesmen and other personnel of Handicrafts emporia. It encourages the deputation of craftsmen from one place to another.

(v) Design centres: With a view to adopting old designs to suit modern needs and evolving new ones, the Board has established four regional Design Development Centres at Delhi, Calcutta, Bangalore and Bombay. These centres not only help craftsmen in the realm of technological processes and raw materials, but also look after designing and development of the crafts in their region, survey requirements, provide training and maintain close collaboration with the state centres, marketing organisations

and exporters. In addition to the four Regional Design Centres, the Board has a Central Handicrafts Development Centre at Bangalore to carry on research work for improving method of production, introducing tools and equipments, evolving new designs, supplying raw materials and training the craftsmen in various fields.

Craftsmen working in the centres make articles which are traditional, but are modified to suit new tastes. They are also entrusted with the task of explaining the methods of production of such articles to the craftsmen of the area.

Designs evolved at the centres are loaned to the craftsmen and production units interested in their production. Exhibitions of the articles designed in the centres are held from time to time to give the public an idea of what has been achieved in this field and also to rouse interest among private producers.

(vi) Marketing: The organisation of wide distribution and sales of craft products all over the country is one of the foremost concerns of the Board. Besides, the Board has undertaken schemes which include market research, promotion of inter-state marketing, laying down standards and specifications, extension of training facilities in the management of emporia, salesmanship and display, introduction of improved techniques with particular emphasis on reducing cost of production and opening of organised production centres.

The Board also maintains show-cases at airports, hotels, railway stations, etc. A Central Handicrafts Marketing Committee,

consisting of representatives of important State Government emporia and other Co-operative marketing agencies, has been set up to give further stimulus and drive to the extension of inter-state marketing. Moreover, the Handicrafts Week every year, during which a rebate is offered on all craft items, focuses attention on the industry and encourages sales. Funds for the publicity of the week in the States are also contributed by the Board.

In order to strengthen and co-ordinate the measures taken for export promotion of crafts, the Board has set up Regional Exporters' Association at Delhi, Bombay, Madras and Calcutta.

(vii) Credit facilities: One of the main functions of the Board is to see that adequate credit facilities are made available to the production units at different stages of production, storage, distribution and sales. Besides loans available to crafts production units from Block Loans for small-scale industries, the Board is also arranging with the State Bank of India and other financing agencies for making available credit to crafts producers on the same terms and conditions as are made available to other industries. Further, the Board has lunched a Supervised Credit Scheme to give financial assistance to the poor craftsmen. The loan under the scheme is given without any security or with small security to recover the loan from the sale proceeds of the products manufactured at different centres.

(viii) Co-operatives: The Board arranges formation of co-operatives of craftsmen and dealers all over the country with a

view to providing financial, technical and marketing facilities to them. The Board has also started a training programme for the co-operative organisers for which trainees from Government Departments and Co-operative Organisations are selected for training. A survey of associations of craftsmen, dealers and exporters has also been completed by the Indian Co-operative Union on behalf of the Board.

(ix) Exhibitions and publicity: The Board participates in fairs and exhibitions of national importance. It also organises a number of exhibitions of articles of selected crafts of comparatively lesser-known areas so as to arouse interest in these products. In addition, the Design Centres of the Board also hold their own exhibitions of the designs evolved by them, thus giving the public, the manufacturers, the exporters and the art-lovers an idea of what has been done and how old designs can be adopted to suit modern needs. The Board has also started participating the exhibitions organised in overseas countries.

For the promotion of exports the Board conducts publicity through special documentary films and illustrated brochures on different crafts. The Board publishes multi-coloured brochures which are distributed in foreign countries for boosting up export market. The Publicity Section of the Board organises nation-wide publicity campaigns for publicising the activities of the Board. This also includes publicity of various exhibitions and special projects undertaken from time to time. The Board also commissions well-known authors to write books on handicrafts subjects. These

books serve the purpose of acquainting the public with all that is best in crafts.

(x) Export promotion: The Export Promotion Section of the Board gives to exporters vital information about crafts which may be exported with benefit. The section maintains a list of exporters and supplies them with information about importers in foreign countries who may be interested in developing handicrafts trade.

(xi) Planning and research: The Planning and Research Unit of the Board compiles statistical data and surveys the problems of handicrafts all over the country. The Unit has brought out a number of reports dealing with the problems of various individual crafts.

(xii) National awards: The Board gives National Awards every year to selected craftsmen in the country in recognition of their excellence in craftsmanship and invaluable contribution to Indian crafts. The scheme is also aimed at giving an incentive to the traditional craftsmen of the country and inspiring them towards greater zeal and artistic perfection. Besides, the Board has instituted a scheme of conferring National Awards for exporters for their outstanding export performance in Indian crafts each year.

(xiii) Crafts museum: With a view to preserving specimens of traditional crafts which may be dying out, the Board has set up a Crafts Museum in New Delhi. The museum has a good collection of traditional craft specimens which provide a ready reference library for handicrafts objects.

It is true that the operation and activities of the Board and its agencies have been generous and well meaning, yet the fact that its contribution, and those of its various agencies to the development of crafts in the country have so far not been very significant can hardly be overlooked. Neither the craftsmen nor the crafts have availed themselves of the much needed services offered by the Board. However, it is quite possible that the craftsmen's illiteracy and lack of resourcefulness stand in the way of their exploiting to the full benefits of the services offered to them by the Board and its technical agencies.

4. ROLE OF CRAFT MUSEUMS:

Excepting the Crafts Museum in New Delhi set up by the All India Handicrafts Board in 1952, there is no other crafts museum in the proper sense of the term in the country. There are, however, some other museums which are partly devoted to crafts. As for example, mention may here be made of the following[1]:-

(i) State Archaeological Gallery, Government of West Bengal.

Though the gallery is particularly rich in excavated and explored antiquities, it has also a beautiful collection of textiles, temple-terracottas, wood and ivory-carvings, kāṇthās (embroidered wraps), scroll-paintings (paṭachitras), bronze lamp stands, images and other crafts objects being creations of the Dhokrās of Bankura and Burdwan. There are also other rural art objects besides some folk dolls, toys and images of flok deities.

1. Based on personal observations. See also Shyamchand Mukherjee, Folk-lore Museum, Indian Publications, Calcutta, 1969, pp.32-34.

(ii) Victoria and Albert Museum, Bombay:

The museum has a good collection of folk and tribal art objects collected from different states.

(iii) Central Museum, Nagpur: The museum possesses different kinds of folk and tribal art objects such as amulets, ornaments, head-dresses, etc. specially used by the tribal folk of Madhya Pradesh.

(iv) Assam State Museum and Cottage Industries Museum:

This Museum at Gauhati preserves arts and crafts of Assam both country-wise and community-wise.

(v) Victoria Hall Museum at Udaipur has a beautiful collection of textiles, head-gears of Western and Central India as also arts and crafts of different regions of India.

(vi) Allahabad Museum in Allahabad is devoted also to handicrafts.

(vii) Chandradhari Museum, Darbhanga has some unique specimens of folk art and folk culture.

(viii) Sikar Museum, Sikar has a good collection on folk crafts.

(ix) Baroda State Museum, Baroda preserves toys, jewellery and articles of worship of local tribes.

(x) Gross Forest Museum: Coimbatore has a good collection of local folk art specimens.

(xi) Indian Museum, Calcutta is noted for its magnificent collection of folk and tribal art objects.

(xii) Bharat Kala Bhawan, Banaras has also a unique collection of rural art specimens.

(xiii) National Museum, New Delhi has a very rich folk and tribal art collection from different places of India.

(xiv) Asutosh Museum of Indian Arts, University of Calcutta appears to be one of the richest University museums in the country. It has a unique collection of rural arts and crafts. Most of the craft specimens of the museum have been collected under the "Rural Art Survey Scheme".

(xv) Gurusaday Museum of Thakurpukur, near Calcutta has also a good collection of folk arts and crafts of Bengal.

(xvi) State Industrial Museum, Government of West Bengal is also devoted to handicrafts.

It has already been mentioned that the Crafts Museum, New Delhi, is the only crafts museum in the country which has been set up with a motive. It not only encourages Indian crafts, but also preserves specimens of old traditional crafts of India, thereby promoting this aspect of Indian culture. The collections include textiles, metal wares, basketry, carvings in wood, ivory and stone, jewellery, leather objects, dolls, toys, etc. The museum gives encouragement to the artisans in supplying with designs and art forms of various types.

The aims and objectives of the Crafts Museum, New Delhi, and other museums which are partly devoted to crafts, mainly include collection, classification, accession, preservation, display and storage of museum objects, publication of monograph, bulletin, guide book, catalogue and picture post-cards. But this is not all. Besides collection, display and preservation of

notable craft specimens, the crafts museums should have a regular documentation programme under which analytical data relating to historical, technological, socio-economic, artistic and aesthetic aspects of the crafts can also be collected. Under this scheme, a museum personal may be deputed to collect data about a particular craft/s of a particular region. He may be provided with a Craft Survey Schedule which will help him in collecting required information regarding different aspects of the craft and its manufacturers. A model schedule[1] designed for this purpose is presented below :-

Part - A

General description of the craft centre with reference to:

(i) History and origin of the craft centre under study.

(ii) Location.

(iii) Social environment with special reference to caste/language/religion/nationality characteristics whichever may have any role in regard to development and persistence of the craft.

(iv) Whether there are any other crafts in the same locality. If yes, the impact of those crafts on the craft under survey.

(v) Institutions and the craft.

(vi) Concentration pattern of production units.

(vii) Craftsmen and the nature of employment.

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1. Prepared on the basis of experience acquired in the field as well as the Craft Survey Schedules prepared by the Social Studies Division, Office of the Registrar General, India, New Delhi, during 1961 Census.

(viii) Prospects of the craft in the locality.

Part - B.

Particulars about designs and motifs:

(i) Origin and development of designs and motifs.

(ii) Name and source of designs.

(iii) Brief description of designs with particular reference to colour schemes, decorative aspects, artistic and ritual significance.

(iv) Symbolism, legends and traditional characteristics connected with the designs.

(v) Whether similar designs found in other types of crafts in the region.

(vi) Sophistication in motifs and designs, if any.

Part - C.

Particulars about articles produced:

(i) Names (local and English equivalents) of articles produced.

(ii) Seasons of productions.

(iii) Measurement of the articles with particular reference to height, length, breadth, etc.

(iv) Is there any preference for production of a particular variety of article ? If so, why ?

(v) Who are the consumers ?

Part - D.

Particulars about production techniques:

(i) Stages of production process in order of sequence.

(ii) Nature of use of different types of tools in different stages of operations.

(iii) Division of labour, if any.

Part - E.

Particulars about tools:

(i) Name (local and English equivalents) and description of the tools.

(ii) Function of the tools.

(iii) From where obtained.

(iv) Is the craftsman satisfied with his tools ? If not, what other tools he desires and why ?

(v) Magico-religious performances and taboo, if any, associated with different tools.

Part - F.

Particulars about raw materials:

(i) Main raw materials - name (local and English equivalents) and from where obtained.

(ii) Subsidiary raw materials - name (local and English equivalents) and from where obtained.

(iii) Privileges and difficulties, if any, in obtaining raw materials.

(iv) Terms and conditions on which raw materials are obtained from different sources.

Part - G.

Particulars about marketing facilities:

(i) Local markets/fairs (melās)/agencies for disposal of products.

(ii) Nature of transport.

(iii) Terms and conditions under which the finished products are disposed of.

(iv) Special problems, if any.

Part - II.

Particulars about craftsmen:

(i) Socio-economic life of the craftsmen with special reference to their social and martial status.

(ii) Heredity of occupation.

(iii) Mobility of occupation, if any.

(iv) Number of families and persons (sex-wise) engaged in the craft.

(v) Status of the community in the local social structure.

(vi) Myths, legends or history connected with the origin of the artisan community.

(vii) Guild or co-operative activities of the craftsmen, if any.

(viii) Workshop and working conditions.

(ix) Craftsmen - their level of living.

(x) State patronage, if any.

(xi) Main and subsidiary occupation.

(xii) Profit and loss.

Part - I.

Photographic coverage:

The museum personal concerned should not only collect representative specimens for preservation in his museum, but also

take photographs of other craft examples for the purpose of comparative study. He should also take photographs of different stages of manufacturing process as well as tools used by the craftsmen.

The Craft Survey Schedule designed for the documentation of craft traditions and practices by the crafts museums is obviously a tentative one, and necessary additions and alterations may be made in accordance with the changing circumstances.

Apart from the documentation programme, the crafts Museums should also arrange temporary and mobile exhibitions of rightly chosen craft examples specially in the rural areas so as to make the general masses more interested in the craft products of the country. While the documentation programme of the crafts museums is meant for the scientific recording of the dying craft traditions, the arrangement of temporary or mobile exhibitions in the rural areas is a sort of audio-visual gadget of focussing attention and arousing interest in the age-old craft traditions which have remained vital through centuries, if not millenniums.

CHAPTER - VI.

CONCLUSIONS.

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CHAPTER - VI : CONCLUSIONS.

With a view to ensuring a balanced economy and providing employment opportunities to millions of people, the crafts should be revived and developed. Moreover, the development of crafts assumes special importance particularly in a country where the home is abode of art and beauty. Further, where the crafts flourish, there prosperity dwells, waste is converted into wealth. Moral values are conserved in society and the outpouring of the human soul on works of art woven into utility elevates the nation's culture to the highest altitude. Work becomes worship and labour becomes capital and functions as the eternal wealth of the country. Labour and life by their confluence enrich the stream of national self-realisation and self-competence.

Hence, on all counts, the crafts must be revived and developed in order for India to go ahead with the dynamics of the time. Most of the problems faced to-day by the crafts and the craftsmen have been discussed in the preceding chapter. Some of the more important problems highlighted therein call for revivification. Broadly speaking, these problems may be divided up into eleven headings[1], viz., (i) problems pertaining to revival and reorientation of the craft traditions; (ii) combination of traditions with modern technology; (iii) raising the standard of living of the craftsmen; (iv) gearing the institutions and the

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1. Mainly based on personal observations. See also: Synopsis of the observations and recommendations made at the Seventh All India Handicrafts Marketing Conference held at Vigyan Bhawan, New Delhi, on November 17, 18 and 19, 1971.

schemes into quick responsible action for the benefit of the crafts and the craftsmen; (v) improvement of designs; (vi) avenues for better credit facilities; (vii) popularisation of craft products; (viii) promotion of exports and internal marketing; (ix) availability of raw-materials; (x) improvement of export publicity and tourist trade and (xi) concessions for development of crafts.

(i) Revival and reorientation of the craft traditions:

An independent nation like India is under an obligation to revive those craft traditions which in the past have brought honour to her from the rest of the world by reason of their great technical and aesthetic stature. The revival of these craft traditions should, however, be undertaken in the light of modern requirements and taste. With the impact of modern civilisation, significant changes have taken place in the aesthetic values of the people. Patronage of the crafts is shifting from the aristocracy to a growing and highly art conscious middle class. Most of the people no longer want elaborately ornamented crafts. They require simple and well-designed objects of utility, inexpensive and handy ones yet having beauty of form. To satisfy the modern needs the traditional designs should be improved. These may or may not be embellished by decorative motifs, but if they are, they should be simple so that they amplify, but do not compete with the form which carries them. To achieve this end, the experts of the regional Design Development Centres should pay

periodical visits to the crafts units for on the spot demonstration aimed at improving traditional designs and evolving new ones. Further, in order to check the deterioration in the general standard and quality of crafts, a quality marking scheme should be effectively implemented. Moreover, the Government should patronise and give recognition to the skilled craftsmen who have produced real works of art, just as they give it to painters, sculptors, dancers, poets and musicians. Such efforts would to a great extent help in restoring the creative urge and imagination, freedom of initiative and above all a resurgence of the craftsmen's self-respect.

(ii) Combination of tradition with modern technology:

Most of the artisans use traditional tools and appliances which not only involve exhausting and hazardous operations, but also have a low turn-over. As a result, they cannot have a steady market. So production has to be made more even and regular. This can be achieved through better labour saving techniques. It is, therefore, essential that ancient techniques should be replaced by modern techniques. Side by side, the working of improved tools and appliances should be demonstrated for the benefit of the craftsmen and they should be given free training for the proper handling of these techniques and appliances. Arrangements should also be made to give the craftsmen financial assistance and hire-purchase facilities so that they can go in for the use of such time-saving and technically improved tools.

The All India Handicrafts Board tries to improve tools and techniques through its Central Handicrafts Development Centre. To provide a wide coverage more developmental centres should be set up in different parts of the country. It is also suggested that a set of the tools developed at the Central Handicrafts Development Centre should be available at the Design Centres of the Board and the State Governments where the craftsmen could study their working. Study visits of the craftsmen to other crafts centres in the same crafts should also be arranged.

(iii) Raising the standard of living of the craftsmen:

The level of living of most of the craftsmen is extremely low. Their earnings are not enough to even provide them with the bare requirements of their stomachs. They are mostly illiterate. They live in unhealthy places which are utterly devoid of basic sanitary facilities and other necessities of life.

In the free market, the craftsmen's employment conditions and terms of work are very erratic and they are at the mercy of both the dealers and exporters. Procurement of raw-materials poses almost insurmountable problems. In the light of all these considerations, the most effective way to increase the income of the craftsmen is to ensure a steady and sufficient flow of work through the State Industries Emporia and the Central Cottage Industries Emporia and other Government agencies; improve working conditions through State legislation and State aid and to provide

raw materials at fair prices. The Directorate of Industries or the Handicraft and Handloom Export Corporation of India Ltd., might well take in hand the distribution of raw materials and arrange to guarantee the marketing of their products, both at home and abroad.

To ensure a better deal for the craftsmen, the whole structure of production as such needs to be reorganised so as to lessen the domination of dealers, exporters, financiers and middlemen. The craftsmen should also be encouraged to learn how to form and run their own Associations, Unions and Co-operatives and thus reap the advantage of collective bargaining. Credit facilities, such as the Supervised Credit Scheme of the All India Handicrafts Board, on easy instalments, without any security, but with technical advice and guidance, should also be provided.

Regarding medical aid to the craftsmen, the Employees State Insurance Scheme, or some group health scheme, should be introduced on a compulsory basis.

An adult literacy drive, through social education centres, and audio-visual education through films shows and still documentaries must be launched. Arrangements for combining education with craft training for the craftsmen and their children should also be made.

(iv) <u>Gearing the institutions and the schemes into quick responsible action for the benefit of the crafts and the craftsmen:</u>

The contributions made by the various institutions connected with the development and promotion of the crafts such

as the All India Handicrafts Board, the Handicraft and the Handloom Exports Corporation of India Ltd., the Co-operative Societies, and the State Industries Departments, etc., have so far been very feeble. The vast scope and area of operation of these institutions and shortage of funds and technical know-how no doubt stand in the way of the implementation of various promotional schemes on a substantial basis. But the scarcity of finance and technical manpower can hardly block the way of the true devotees who have the determination, the spirit of service and strong will power to work for a new resurgence of the crafts, and a new deal for the artisans who produce them. Thus, the future of the crafts largely depends upon the determination and the staunch spirits of those crusaders who are closely associated with, and concerned about, the functioning and development of crafts in different centres of India.

(v) Improvement of designs:

The Indian craftsmen generally produce objects of traditional designs. But it is evident from experience in marketing in recent years that unless changes are effected in designs of our craft objects, they cannot compete with machine-made products which are also comparatively cheap, beautiful and utilitarian. Our crafts can only compete with the machine-made products if the designs are improved according to the changing taste of the modern day. But the improvement in designs should be made without sacrificing the traditional qualities and the artistic standards of the craft objects. The craftsmen should retain the old and blend it with new things of their own inventions.

The All India Handicrafts Board's Design Centres may be playing an important role in improving the craft designs, but they should have more extensive services in the country. For popularising designs a craft magazine may be brought out by the Board with a section on designs which would show the latest designs produced. Arrangements should also be made to train craft designers at institutions like the National Designs Institute, Ahmedabad, provided suitable facilities are available; otherwise the Board may set up an Institute for training of Craft Designers. Encouragement should also be provided to free-lance Artists and Designers and if possible, working facilities may be provided to them in the Board's Design Centres.

(vi) Avenues for better credit facilities:

For the development of crafts the manufacturing units or the individual craftsmen can avail of the facilities of liberalised credit given by a few Banks such as the State Bank of India, the Bank of Baroda and the Punjab National Bank. Under this scheme, the craftsman has to be certified as a practising craftsman with the required talent and capacity to utilise the credit. The task of giving these certificates should be taken up by the All India Handicrafts Board and the State Directorate of Industries so that more and more credits can be extended to the craftsmen. Moreover, other nationalised banks should also initiate similar schemes so as to cover large number of craftsmen.

The Punjab National Bank advances loans to emporia for building up stocks, purchase of raw materials and for working

capital requirements. It is suggested that similar facilities should also be extended by other nationalised banks.

(vii) Popularisation of craft products:

The future of Indian crafts is to a great extent dependent on the popularisation of craft products among the masses, both rural and urban. At present, our craft products mainly cater the needs of the rich, and the general masses cannot afford to purchase them. With a view to popularising the craft products among the masses more utility articles should be produced at cheaper rates. Moreover, a wider publicity through journals, cinema, radio and also through opening more show rooms and arranging exhibitions would go a long way in popularising our craft products among the masses. Unless masses form the bulk of purchasers, crafts cannot thrive. A stabler and wider home market among the masses can be created if the Central and the State Governments make suitable arrangements to sell craft products in the rural areas through mobile shops and exhibitions.

(viii) Promotion of exports and internal marketing:

There has been a boom in the export of crafts products to various countries of the world. The rate of growth in the exports of crafts products during 1969-70 is very significant specially when compared to a rise of about 4 per cent in the total exports of our country. Consequently, the share of exports of craft products in the total exports of our country has increased from 5.6 per cent in 1968-69 to 6.7 per cent in 1969-70, and crafts have become one of the important export items along with

jute manufacture, tea, iron ore, engineering goods and leather manufacture[1]. As our craft goods have had a good reception in foreign markets, there are great possibilities of increasing the volume of trade. For the promotion of exports the All India Handicrafts Board should not only establish Information Posts abroad, but also sponsor a number of teams to all the regions of the world so as to get in touch with the commercial foreign tastes and trends. The existing offices of the Handicrafts and Handlooms Exports Corporation should be further mobilised towards giving this information for the general benefit of the exporters in this country.

For the promotion of exports wider publicity of craft goods through special documentary films, illustrated brochures, exhibition and fairs is also necessary. A Central Show-Room should also be set up where craft goods can be displayed on a regular basis, and foreign buyers may be invited to have a view. It would be a better idea if a multi-storeyed building is constructed by the Government in a central place where the exporters may be given space on hire to display their products. Side by side, the exporters and their Associations should also increasingly take part in the developmental activities of product development, publicity, etc. It is also suggested that the exporters and the manufacturers should be exempted from payment of sales-tax (Central or State) for all raw materials purchased by them

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1. Circular No.HB/PR/Exp. Stat/69-70 dated 30.10.70 issued by the All India Handicrafts Board, West Block-VII, R.K. Puram, New Delhi-22.

for production of handicrafts meant for exports. Moreover, there should be quality control in handicraft goods produced both for export and internal consumption.

In the field of internal marketing, there is considerable need and scope to provide more established marketing organisations. In cities having concentration of important crafts, associations of private dealers should be organised. A list of local manufacturers and dealers should also be prepared and the same may be publicised among the internal buyers and the tourists through Tourist Department. Some of the states like Andhra Pradesh and Madras practise a method of procurement through co-operatives associated with the marketing organisations. Similar societies may be encouraged in other states to organise production as per requirements of marketing organisations.

It has been seen that the craftsmen mainly cater to individual taste or to the luxury of tourist interest. The market is, therefore, limited. Products of more utilitarian value can gain them a wider and stabler market. Financial aid by way of loans and subsidies, exemption of craft products from taxes, supply of raw materials at concessional rates and opening training centres are steps which government and local authorities can take for better production and general improvement of the lot of the craftsmen.

It has also been observed that the internal publicity done by the emporia organisations as well as the All India Handicrafts Board is not adequte. Since the State Governments

do not have enough funds for this, it is suggested that the All India Handicrafts Board should organise this campaign to cover handicrafts of all states in active co-operation with the State Marketing Corporations.

(ix) Availability of raw-materials:

Our crafts can flourish only if the raw materials used by the craftsmen are available at reasonable and concessional prices. It is observed that there is no clear assessed data of the raw material requirements of many of the crafts. It is suggested that an assessment should be first made to know the precise position of raw material situation. Solution of the problem should then be made by a co-ordinated effort of the All India Handicrafts Board and the Industries Department in each state. So far as the distribution of raw materials is concerned, it is suggested that the distribution should be done through the State Governments. The supply of special raw materials like sandal wood, ivory, etc. for crafts in the States where these raw materials do not exist, should be arranged through inter-state understanding. Sometimes some raw materials like rose wood, red wood, sandal wood, etc. run short on account of their heavy export. It is suggested that the concerned State Governments should be requested to impose restrictions on the export of these materials.

(x) Improvement of export publicity and tourist trade:

For an effective export publicity, the 3 media of Radio-Press-TV should be used and adequate funds may be invested in

this work. Films on handicrafts can be shown in foreign countries through Embassies, while the German TV and other representatives of foreign TV can be approached for assistance in exhibiting not only the films, but also some features on Indian Handicrafts. In foreign countries Indian handicrafts can also be popularised through show-rooms in Indian embassies. The All India Handicrafts Board should also bring out publications with excellent presentation for which the advertisements can be inserted by the individual handicrafts exporters. The Board can also contribute a few pages for general publicity of handicrafts. The various chambers of commerce in other countries may also be used for export publicity on a reciprocal basis with our own Export Chambers.

As regards tourist trade it may be pointed out that there is no adequate facility for sale of goods to tourists at places of tourists' interests. It is suggested that special counters should be set up in emporia for keeping items of tourists' interest, and more tourist shops should be opened at places of tourists' interest. Moreover, in the brochures given to the tourists a list of emporia selling items of their interests should also be incorporated. It is also suggested that the craft units should develop special products which really interest tourists portraying cultural heritage of India. To attract interest of tourists, some emporia may also arrange demonstration of craftsmen-at-work during tourist seasons and give wide publicity.

(xi) Concessions for development of crafts:

In the small-scale industries sector many concessions such as refund of toll-tax, refunds of octroi duty, electricity

at cheap rate, subsidy on transport of raw material and finished goods, exemption of sales tax for five years, land on lease on very easy terms, construction of sheds on nominal rent or hire-purchase basis, etc. are allowed. In the handicrafts field, if similar concessions are provided by the Government, the handicrafts can also develop to a great extent. In the handicrafts field, there are peculiar problems of different states, and as such it is suggested that the All India Handicrafts Board may form a committee to go into these problems of different states craft-wise and suggest specific measures or the concessions required in each state. This will help the Board to formulate a line of action.

By fostering the development of the crafts, we not only serve the purpose of creating additional employment, boosting internal production, augmenting foreign exchange, but also add stature to our national culture and through this tonour nation's pride. The world of craft is as valuable as the world of science, philosophy or ethics. Crafts reflect the state of human society through the individual who has in him, in small or big proportion, what mankind as a whole have in them. Crafts treasurers give us a glimpse into the core of the collective mind and societies through the mirror of individual mind that created them. As the crafts are the indigenous creation of ordinary people of villages and small towns, they reveal the innate artistic taste of the masses and their desire to combine utility with beauty. The people's instinct for the beautiful

has been expressed by the craftsmen in an infinite variety of traditional forms which remains unchanged or unaffected over generations.

No matter how much a country is industrialised, it always needs its artisans. A skilled craftsman, conscious of his freedom, loves his craft, whereas a factory worker often comes to hate his work. The craftsman takes a personal interest in the quality of his handiwork, but the wage-earner does not. The factory worker cannot take the place of the artisan. In handicrafts the range and variety of form and design will always be much greater than in machine-made articles. In mass production one design must be used a thousand times. The craftsmen on the contrary can use a new design every day. Because of their variety and excellence, their artistic value and utility, Indian crafts appeal to the senses of buyers.

The modern man lives in a mechanised society. He is tired of this complex and busy world. He finds in the craft products a freshness and simplicity. The handiworks can give him abundantly a spiritual refreshment and artistic recreation. It is due to this, that very recently crafts have begun to enjoy popularity throughout the world.

Now in most of the places, crafts are in a stage of decay due to the machine production. It is, however, worth mentioning that people begin to appreciate these rural crafts at this crucial time. Only these humble craft works made by the rural people keep us the company sharing since the beginning of time

all the torment, longing and restlessness of our minds. A craft that is a happy blend of beauty and utility immortalizes the individual mind and spirit. Further, "where the crafts flourish, there prosperity dwells, unemployment vanishes, waste is converted into wealth, and brains and emotions co-operate under the restraining leadership of will. The sanctity of the home is preserved. Moral values are conserved in society and the outpouring of the human soul on works of art woven into utility elevates the nation's culture to the highest altitude. Work becomes worship and labour becomes capital and functions as the eternal wealth of the world. Labour and life by their confluence enrich the stream of national self-realisation and self-competence".[1]

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1. B. Pattabhi Sitaramayya, "The Rashtrapati's Message", 4th December, 1948.

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